

SPP-77/97

SERVICE MANUAL

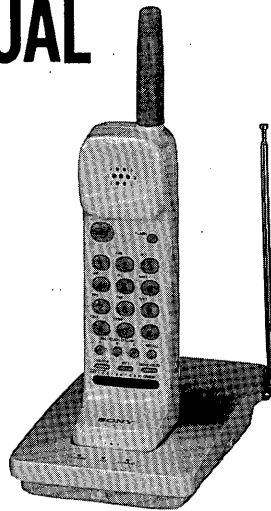


PHOTO : SPP-77

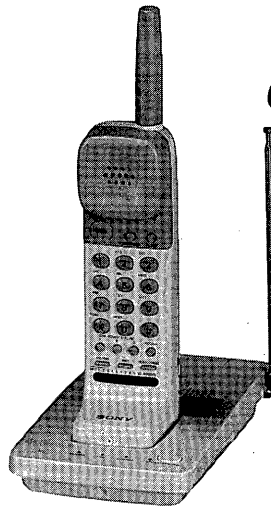


PHOTO : SPP-97

*US Model
Canadian Model
E Model*

SPECIFICATIONS

General

Frequency control	Crystal-controlled PLL
Operation mode	FM, duplex
Operating frequency	46 MHz/10 channel 49 MHz/10 channel
Supplied accessories	AC power adapter (AC-T37) (1) Telephone line cord (1) BP-T40 rechargeable battery pack (1) Wall bracket and screws (1 set) Code table (1)

Handset

Power source	Rechargeable battery pack
Battery duration	Approx. 7 days when set to RING ON Approx. 2 months when set to BATTERY SAVE
Dimensions	Approx. 58 mm (W) x 201 mm (L) x 70 mm (D), not counting antenna (Approx. 2 1/4 in. x 8 in. x 2 3/4 in.)
Antenna length	72 mm (2 3/4 in.)
Mass	Approx. 315 g (including battery) (11 1/8 oz.)

Base unit

Power source	DC 9V from AC power adaptor
Dimensions	Approx. 118 x 37 x 229 mm (W/H/D), not counting antenna (Approx. 4 3/4 x 1 1/2 x 9 in.)
Mass	SPP-77 : Approx. 353g (12 1/2 oz) SPP-97 : Approx. 395g (14 oz)

Design and specifications are subject to change without notice.



CORDLESS TELEPHONE
SONY®

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Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

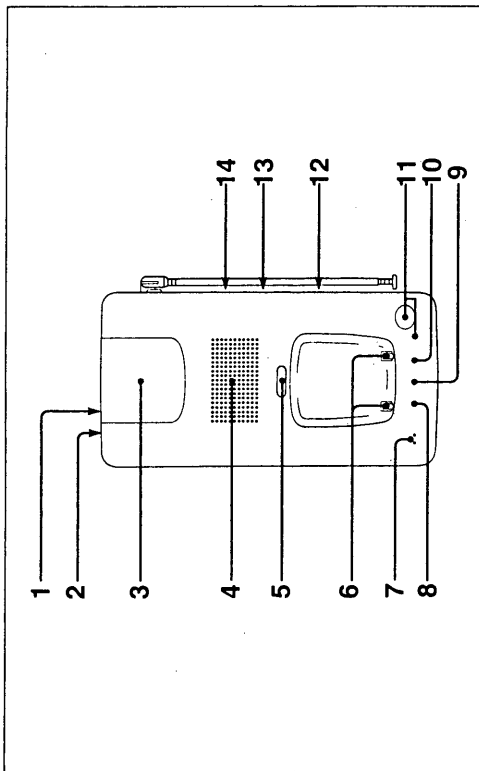
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Overview

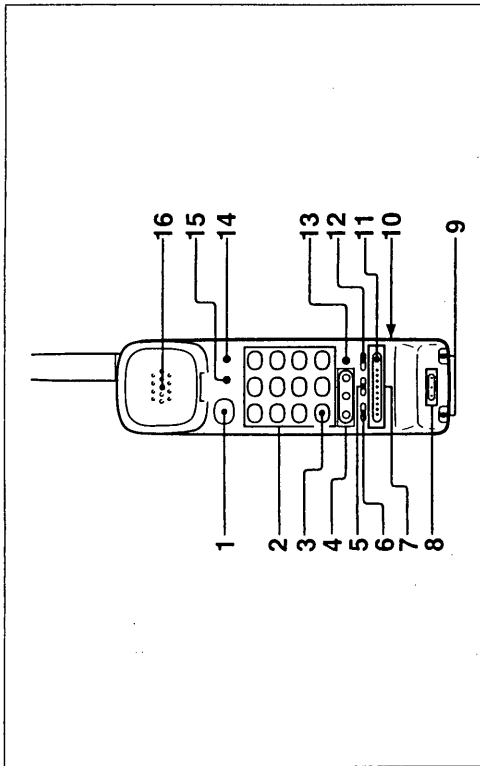


Base Unit

- 1 DC IN 9V Jack**
This is where you plug in the AC adapter.
- 2 TEL (telephone) LINE Jack**
This is where you plug in the line from the telephone.
- 3 Handset hanger hook (inside of cover)**
- 4 Speaker (SPP-97 only)**
Allows you to receive calls at the base unit.
- 5 PAGE button (SPP-77)**
Call the handset.
INTERCOM button (SPP-97)
Press to communicate with the handset.
- 6 Charge terminals**
These contact with the terminals on the handset to charge the battery.
- 7 MIC (microphone) (SPP-97 only)**
- 8 POWER lamp**
Lights when power is supplied to the base unit.
- 9 LINE lamp**
Lights when the telephone line is engaged.
- 10 CHARGE lamp**
Lights when the handset is properly charged on the base unit.
- 11 SPEAKERPHONE button/lamp (SPP-97 only)**
Allows you to receive calls at the base unit.
- 12 SPEAKER VOL (volume) control (SPP-97 only)**
Use to control the volume of the speaker.
- 13 RINGER selector (SPP-97 only)**
Use to control the volume of the ringer.
There are three settings: H (high), L (low), and OFF.
- 14 DIAL MODE selector**

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Overview



Handset

- 1 TALK button**
Press to answer the phone, make a call, or disconnect the line after a phone call. The button lights when in use.
- 2 Dialing keys**
The keys light when you dial.
- 3 TONE button**
Temporarily switches the phone from pulse to tone dialing.
- 4 ONE-TOUCH DIALING buttons**
- 5 MUTE button**
Press to keep you from being heard by the other party on the line.
- 6 VOL (volume)/PGM (program) button**
Press to:
• Change the volume of the handset.
• Program the telephone for memory dialing.
- 7 Multi-Indicators**
Light to:
• Show the strength of the battery.
• Show the telephone number being dialed.
• Show the selected channel.
• Confirm the memory dial number.
- 8 Microphone**
- 9 Charge terminals**
These come into contact with the terminals on the base unit to charge the battery.
- 10 Mode switch**
• Set to RING ON to turn the ringer on.
• Set to BATTERY SAVE to turn the ringer off and conserve battery power.
- 11 CHANNEL button**
Allows you to select the best channel for optimum reception.
- 12 REDIAL/PAUSE button**
Press to:
• Redial the last number called.
• Inserts a pause in the dialing sequence.
- 13 RECALL button**
Press when using memory dialing.
- 14 FLASH button**
• Press to switch parties when using call waiting.
• Press to disconnect and place a new call.
- 15 INTERCOM button (SPP-97 only)**
Press to communicate with base unit.
- 16 Speaker**

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SECTION 1 GENERAL

This section is extracted from instruction manual.

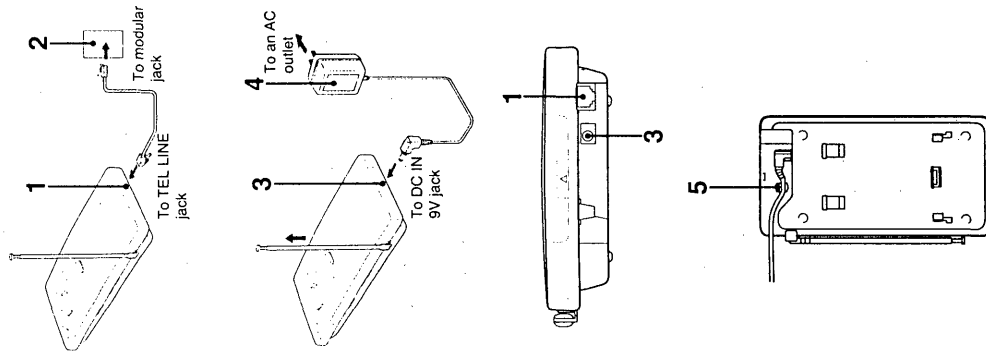
Making Connections

Before doing this procedure, make sure there is a modular telephone jack in the room or office where you will install the telephone. If there is no modular jack, contact your telephone company and ask them for assistance.

- 1 Connect one end of the telephone line cord to the base unit.
- 2 Connect the other end of the telephone line cord to the modular jack on the wall.
- 3 Connect the plug of the AC power adapter to the DC IN 9V jack on the base unit.
- 4 Plug the AC power adapter into an AC outlet.
- 5 To avoid accidentally disconnecting the AC power adapter plug from the base unit, fit the cord of the adapter into the groove on the bottom of the base unit.

Notes

- Connect the AC power adaptor to continuous power supply. If the telephone is connected to an AC wall outlet where power is cut off every night, the battery pack will not be charged, the digital security code and all programmed numbers will be lost from memory. (Even if the handset is on the base, when the power is turned off, not only will the battery pack not be charged, but the digital security code and programmed numbers may be lost.)
- If the digital security memory is lost, charge the handset battery on the base unit with the handset in the RING ON mode (see page 16).
- For details on how to hang the telephone on the wall, see page 27.



Charging the Battery

IMPORTANT!

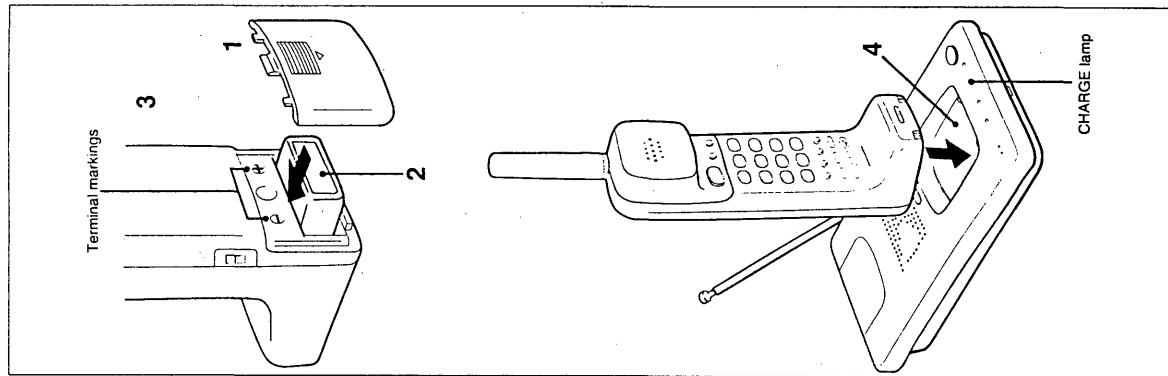
Before initial use, charge the supplied battery pack for more than 10 hours.

- 1 Remove the battery compartment lid by pushing it downward.
- 2 Insert the battery pack into the battery compartment.
- 3 Replace the battery compartment lid by pushing it upward.
- 4 Place the handset on the base unit and charge the battery pack for more than 10 hours.

The CHARGE lamp lights when the handset is fully seated onto the charge terminals of the base unit.

Notes

- The battery pack supplied uses a lead acid battery, and therefore you do not have to worry about the "memory effect" which repeated partial discharge and recharge of nickel-cadmium batteries can produce. It is recommended that you charge the battery pack as often as possible.
- If the handset battery pack has been completely discharged, you will not be able to recharge it back to its full capacity by a single charge.
- The battery pack will gradually discharge by itself over a long period of time even if you do not use it.



Selecting Tone/Pulse Dialing

When to Charge the Battery

Recharge periodically

As long as the handset is placed back on the base unit after each call, the battery will be recharged continuously.

The lead acid battery used in this set works best when recharged often. Leaving the battery discharged for an extended period of time can damage it. Please take the following precautions:

- In the RING ON mode, charge the battery for 10 hours every 7 days, or whenever you hear the low battery alarm.
- In the BATTERY SAVE mode, charge the battery for at least 10 hours every month, or whenever you hear the low battery alarm.

Battery duration

The battery duration is approximately 170 hours (7 days) in the standby mode. If talking continuously on the handset, the duration is approximately 12 hours.

Battery condition

When TALK of the handset is pressed, the multi-indicator lamps will light up and show the battery condition.

Battery condition	Multi-indicator lamps
Battery has full power	• • • • • • • • • •
Battery has some power left (It is about time for recharging)	• • • • •
Battery needs recharging (Charge the battery pack for 10 hours)	• •
Battery is out of power	

If the handset battery becomes weak

- A beep tone will be heard every 3 seconds during conversation and the call will be disconnected after one minute.
- A beep tone will be heard every 3 seconds for 15 seconds during programming, etc. (not during conversation).
- Two of the multi-indicator lamps at far left will start to flash at the same time when the beep tone is heard.

How to Determine Battery Damage

Damaged batteries will not take a charge. To determine whether your battery is damaged, put the handset on the base unit for over 10 hours. Then press TALK to see how many multi-indicator lamps light up. If only a few or none of the lamps light, your battery is damaged. See your retailer or contact a Sony Service Center for a replacement of battery.

Notes

- If the battery becomes completely discharged, the digital security codes will be erased and all programmed numbers will be lost from memory. To reprogram, first charge the battery. Set the handset to the RING ON mode and place the handset on the base unit for more than 10 hours. You need to charge a fully discharged battery a number of times before it is recharged to its full capacity.
- When leaving the handset unused and away from the base unit for more than a month, take the battery out of the handset. In this case, the digital security code and other programmed numbers will be erased. To resume use, recharge the battery and reprogram the security code and other numbers.

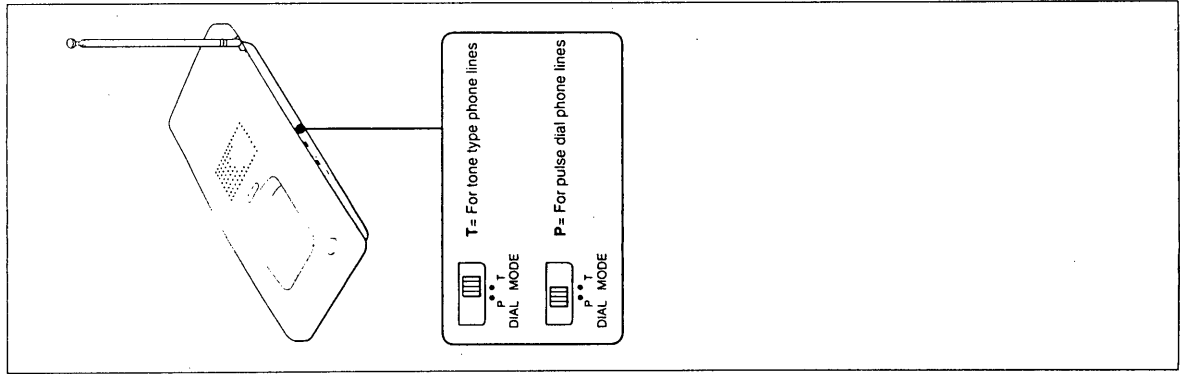
Before making calls with the telephone, you have to set the DIAL MODE selector to match the type of telephone line:

- Set to "T" for tone dialing systems.
 - Set to "P" for pulse dialing systems.
- If you don't know what dialing system is used for your line, do the following procedure. This will help you determine which setting to use.

- 1 Make sure the DIAL MODE selector on the base unit is set to T (tone).
- 2 Make a trial call. For details on making calls, see page 14.
- 3 If the call goes through, leave the selector set to T (tone).

or

If the call doesn't go through, set the selector to P (pulse).



Programming the Security Code

The first time you charge the battery pack, a random security code is automatically assigned between the base unit and the handset. Only a handset which has this unique security code can make calls through the base unit. This system prevents the possibility of other cordless telephone handsets to make calls through your base unit.

You normally do not need to change the security code. However, in the unlikely event that another cordless phone uses the same security code, you can manually change the code by following the procedures described below.

(This procedure will change the code in both the base unit and the handset. The code can be changed as often as desired. Make sure that the mode switch is set to the RING ON position.

1 Press VOL/PGM.

One of the multi-indicators starts blinking.

2 Press #.

The telephone beeps once to indicate that it is ready to program the code.

3 Press the dialing keys to enter a three-digit number between 001 and 299.

The corresponding indicator lamps light as you press each button to show the code that you are entering.

4 Press VOL/PGM.

The telephone beeps to confirm that the code has been successfully entered.

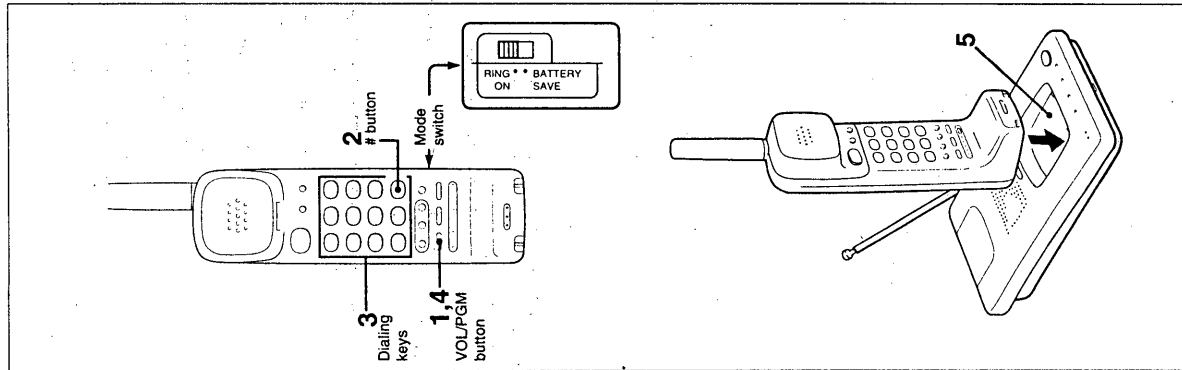
If you entered any other number outside of the range described in step 3, the telephone beeps five times to show that the security code has not been entered. If this happens, start the procedure over again from step 1.

5 Immediately place the handset on the base unit.

The telephone beeps again to confirm that the code has been successfully programmed.

Notes

- A prolonged power failure will erase the digital security code. To reprogram, place the handset on the base unit with the handset in the RING ON mode.
- Five short error beeps give warning if you press any number other than 001 to 299 (such as 300). In this case, start from the beginning.



Making Telephone Calls

1 Pick up the handset from the base unit.

2 Press TALK.

The multi-indicator lamps scan. After the multi-indicator lamps stop scanning, TALK and dialing buttons light. Confirm the dial tone.

If the handset beeps five times after you press TALK, you are too far away from the base unit. Move the handset closer to the base unit to improve reception.

3 Dial the number.

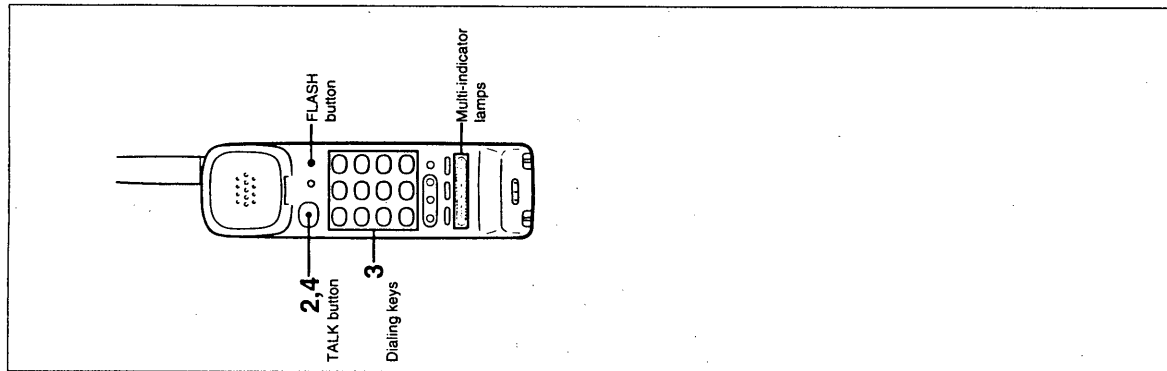
Talk when your party answers.

If you move too far from the base unit while conversing, you will hear a lot of interference or the out of range alarm will beep every second. Immediately move closer to the base unit to improve reception otherwise the call will be automatically disconnected after 15 seconds. Reception will improve and the out of range alarm will stop when you are within range of the base unit.

4 After you finish the call, press TALK again to disconnect the line.

The TALK button lamp goes off. You can also disconnect the line by replacing the handset on the base unit.

If you want to disconnect the line and immediately make another call, press FLASH instead of TALK in step 4. Then dial the new number.



Redialing a Number

If the line is busy when you call someone, or you want to call someone you just called, there is no need to redial the number again manually. The REDIAL button automatically redials the most recently dialed number.

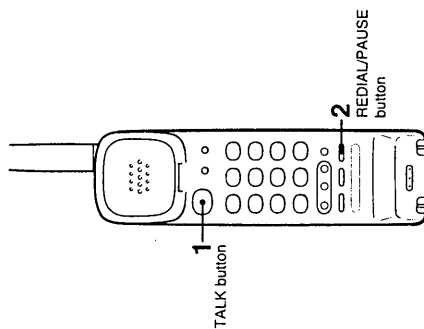
1 Press TALK.

2 Press REDIAL/PAUSE.

Redialing only works for the last number you called. You can use this feature to redial numbers up to 32 digits long.

Note

You can also use the REDIAL/PAUSE button to keep numbers you just called confidential. Simply press REDIAL/PAUSE twice after finishing a call. This will erase the number you just called from the redial memory.



Receiving Telephone Calls

1 When the phone rings lift the handset from the base unit. Then press TALK.
The TALK button blinks when you receive a call. If the handset is set to BATTERY SAVE, it won't ring when you get a call. Only the base unit will ring.

2 Speak into the microphone.

3 After you finish the call, press TALK again to disconnect the line.

You can also disconnect the line by replacing the handset on the base.

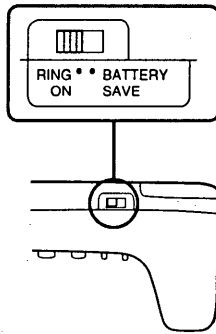
To adjust the volume level of the handset
Adjust the volume through the handset during conversation. High or low volume can be selected by pressing VOL/PGM successively. Normally, you should use the high setting.

To select the ringer mode

Use the mode switch.

RING ON: Normal standby mode. The handset will ring on an incoming call.

BATTERY SAVE: The handset does not ring on an incoming call, which prolongs the battery duration. You can still make and receive calls.



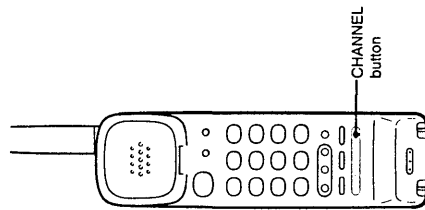
THE HANDSET WILL NOT RING ON AN INCOMING CALL WHEN SET TO THE BATTERY SAVE MODE.

Do the following procedure to improve reception if there is a lot of interference noise when you make or receive telephone calls.

- 1 Move the handset closer to the base unit.**
Many times, reception can be improved by simply moving the handset closer to the base unit.
- 2 If noise still persists, press CHANNEL to select a better channel.**

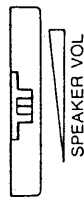
IMPORTANT!

Before pushing CHANNEL, make sure you first try moving closer to the base unit in order to improve reception. If you press CHANNEL when the handset is too far from the base unit, the line may be disconnected. In this case, place the handset on the base unit with the handset in the RING ON mode.

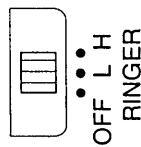


- 1 When the phone rings press SPEAKERPHONE on the base unit.**
The LINE and SPEAKERPHONE lamps light.
- 2 Speak into the microphone on the base unit.**
- 3 After you finish the call, press SPEAKERPHONE again to disconnect the line.**
The LINE and SPEAKERPHONE lamps go off.

To adjust the volume of the base unit speaker Use the SPEAKER VOL control.



To adjust the ringer sound level Select H (high), L (low) or OFF using the RINGER selector of the base unit.

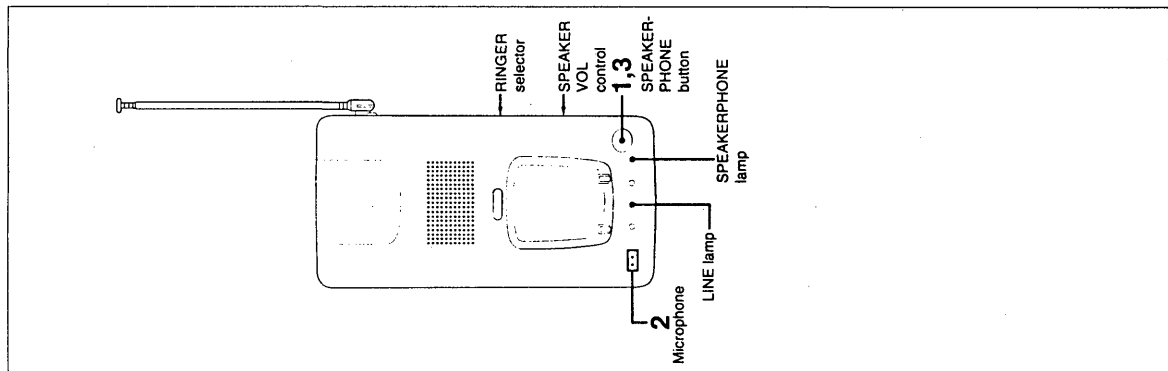


Note

The handset rings even if the RINGER selector of the base unit is set to OFF.

For best speakerphone results

- You may not be able to hear the other person's voice in a noisy place. Use the speakerphone in a quiet room.
- Do not bring your hand or other object too close to the microphone. This will result in a shrill noise (howling).
- When speaker volume is loud, or the telephone has been placed close to a wall, you may find that the volume drops suddenly. This is due to a circuit in the telephone designed to protect against howling. In such cases, lower the volume slightly.

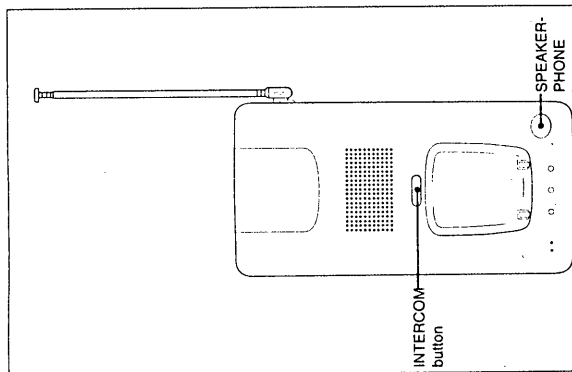


Transferring Calls from the Base Unit to the Handset

- 1 Ask the other party to wait.
- 2 Press INTERCOM on the base unit.
This puts the call on hold.
- 3 When the handset rings, press TALK.
- 4 If you want, you can also communicate between the handset and base unit at this time.
If there is no answer at the handset, press INTERCOM on the base unit again to take the other party off hold.
- 5 Press SPEAKERPHONE.
The call is transferred to the handset.

Note

Make sure you press TALK before you press SPEAKERPHONE. If you press SPEAKERPHONE first, the call will be disconnected.

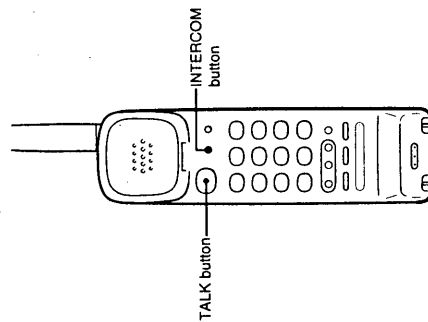


Transferring Calls from the Handset to the Base Unit

- 1 Ask the other party to wait.
- 2 Press INTERCOM on the handset.
This puts the call on hold.
- 3 When the base unit rings, press SPEAKERPHONE.
- 4 If you want, you can also communicate between the handset and the base unit at this time.
If there is no answer at the base unit, press INTERCOM on the handset again to take the other party off hold.
- 5 Press TALK on the handset.
The call is transferred to the base unit.

Note

Make sure you press SPEAKERPHONE before you press TALK. If you press TALK first, the call will be disconnected.



Memory dialing allows you to assign an entire telephone number to a single dialing button. When you want to dial the number, simply press the button under which you programmed the number.

Programming Telephone Numbers for Memory Dialing

You can program up to 13 telephone numbers for memory dialing: three under the ONE-TOUCH DIALING buttons (A-C), and ten under the dialing keys (0 to 9). Each number can be up to 16 digits long. (Pauses and tones count as one digit and cannot be entered before a number.)

1 Press VOL/PGM.

One of the multi-indicator blinks slowly.

2 If you want to program a number under a ONE-TOUCH DIALING button (A-C), press the appropriate button.

or

If you want to program a number under a dialing key (0-9), press RECALL. Then press the appropriate button.

The alarm sounds and the indicator goes off.

If a number is already registered under the button you choose, it will be replaced by the new number you are programming.

3 Enter the telephone number that you want to program.

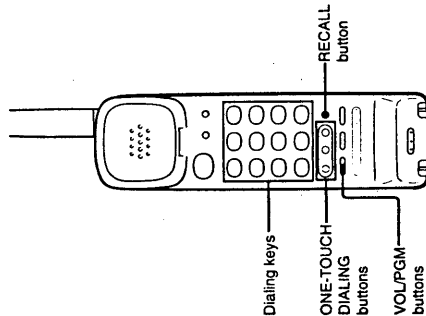
The multi-indicators light to correspond to the numbers that you enter. If you try to enter a telephone number longer than 16 digits, the telephone beeps and the operation ends. You then have to start over again from step 1.

4 Press VOL/PGM to end the procedure.

The telephone beeps to show that the number has been successfully programmed.

Notes

- If you pause and don't make any entries for more than 20 seconds, the telephone automatically stops the operation. Then start over again from step 1.
- If you make a mistake at any point in the procedure, press VOL/PGM. Then start over again from step 1.



Using Memory Dialing

After programming telephone numbers for memory dialing, use the following procedure to dial a number.

- 1 Press TALK. Then wait for the indicators to stop blinking and until you hear the dial tone.
If the handset beeps five times after you press TALK, you are too far away from the base unit. Move the handset closer to the base unit to improve reception.
- 2 If you want to dial a number programmed under the ONE-TOUCH DIALING buttons (A-C), press the appropriate button.
or
If you want to dial a number programmed under a dialing keys (0-9), press RECALL. Then press the appropriate dialing button.
If there is no number programmed under the button, the telephone beeps five times.

To change a programmed number

Program a new number using the procedure above. The old number will be erased automatically.

To program numbers connected to a PBX

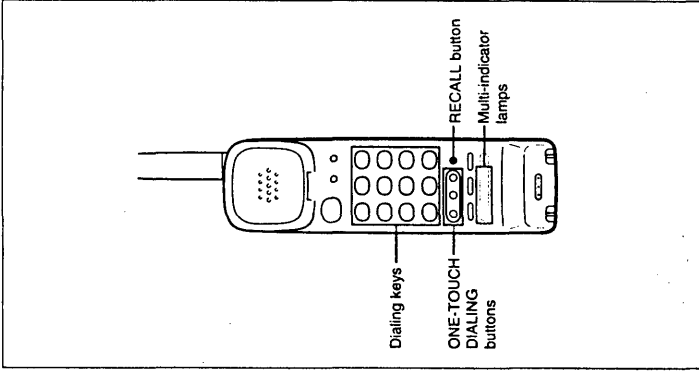
Enter a pause in the correct place when programming the number. To enter a pause, press REDIAL/PAUSE.

Confirming Phone Number Programmed into One-touch and Speed Dialing Memory

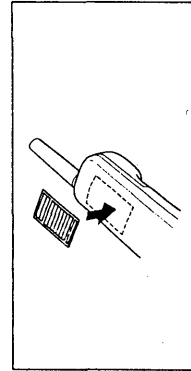
ONE-TOUCH DIALING buttons (A to C)
Press ONE-TOUCH DIALING which you wish to confirm (A to C).
The multi-indicator lamps corresponding to the programmed digits light up one by one.

Speed dialing buttons (0 to 9)

- 1 Press RECALL.
- 2 Press the dialing keys for the speed dialing memory which you wish to confirm.
The multi-indicators corresponding to the programmed digits light up one by one. (Multi-indicators 1 and 10 light for the [1] key, 2 and 10 light for the [2] key, and 4 and 10 light for the [REDIAL/PAUSE] key.)



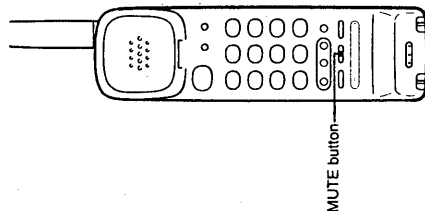
To keep a directory of what you programmed
Write down the names of the persons or place whose numbers you have programmed on the supplied code table and stick it on the rear of the handset.



Preventing the Other Party from Hearing You

To keep yourself from being heard by the other party, press MUTE. The multi-indicator blinks to show that the mute feature is on. You will be able to hear the other party, but they won't be able to hear you.

To resume the conversation, press MUTE again.



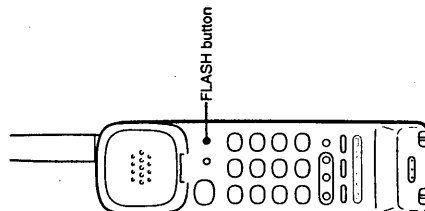
Using Call Waiting

(For users with call waiting service only.)

To switch between callers when there are two callers wishing to talk with you, press FLASH. Each time you press FLASH, the telephone switches between callers.

Note

If you do not have this service, the line will be disconnected when FLASH is pressed.



(SPP-77)

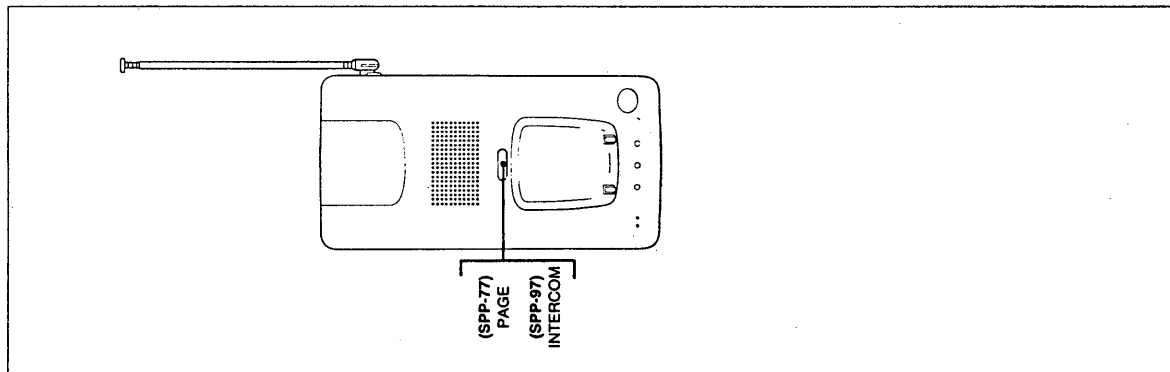
To ring the handset from the base unit, press PAGE on the base unit. The handset continues to ring as long as you hold down PAGE.

(SPP-97)

To ring the handset from the base unit, press INTERCOM on the base unit. The handset continues to ring until you press INTERCOM again. The intercom rings when you page the handset even if the RINGER selector is set to OFF.

Note

The handset will not ring if the mode switch is set to BATT SAVE or the battery is dead.



To Call the Handset from the Base Unit

The mode switch on the handset must be set to RING ON.

- 1 Press INTERCOM on the base unit.
- 2 When the handset rings, press TALK.
- 3 You can talk between the base unit and the handset.
- 4 To disconnect
On the handset: Press TALK again.
On the base unit: Press SPEAKERPHONE.

To Call the Base Unit from the Handset

- 1 Press INTERCOM on the handset.
- 2 When the base unit rings, press SPEAKERPHONE.
- 3 You can talk between the base unit and the handset.
- 4 To disconnect
On the base unit: Press SPEAKERPHONE again.
On the handset: Press TALK.

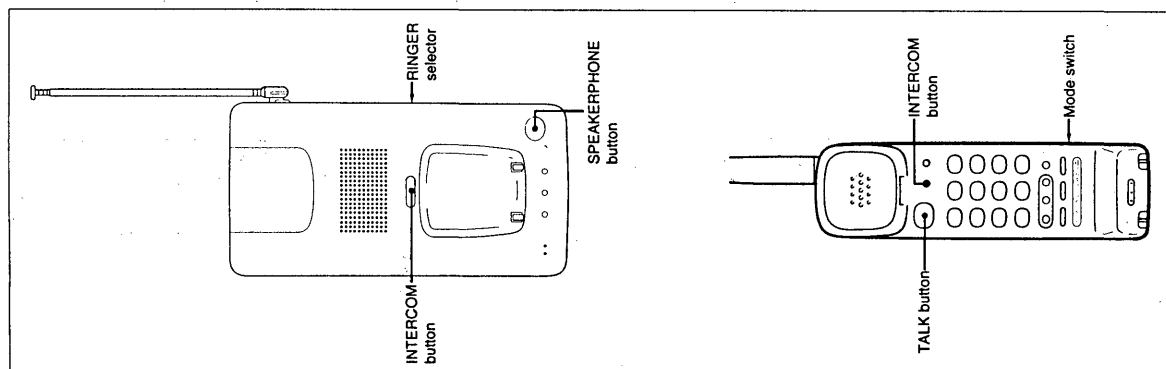
In case of intercom, the base unit rings even if the RINGER selector of the base unit is set to OFF.

If You Receive an Incoming Call During Intercom

When a call comes in, the base unit rings.

To answer the call on the base unit
Press TALK on the handset to disconnect intercom.

To answer the call on the handset
Press SPEAKERPHONE on the base unit to disconnect intercom.



This feature allows persons who are connected to a pulse dialing system to temporarily send tone signals. This is useful when you want to access various on-line telephone services and long-distance services such as MCI and Sprint.

These on-line services require that you enter information by sending tone signals from your telephone. By setting the telephone to send tone signals, you can take advantage of these convenient services even if you are connected to a pulse dialing system.

Note

If your phone is connected to a tone dialing system, you won't have to do this procedure, as the telephone is already set to send tone signals.

- 1 Call the on-line service.

For details on making calls, see page 14.

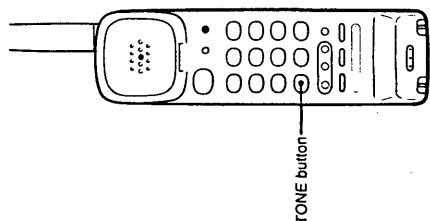
- 2 After you connect with the service, press TONE.

This switches the telephone to temporarily send tone signals.

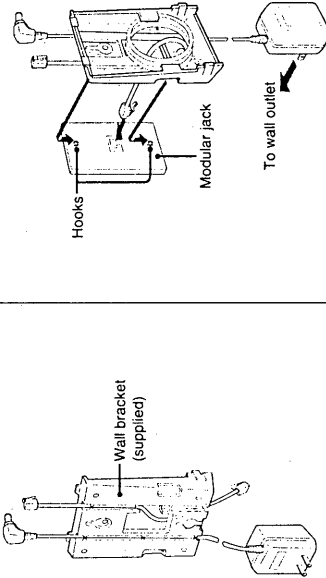
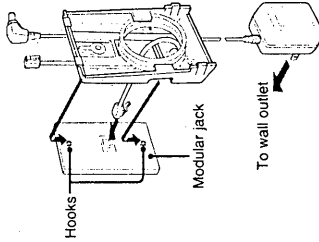
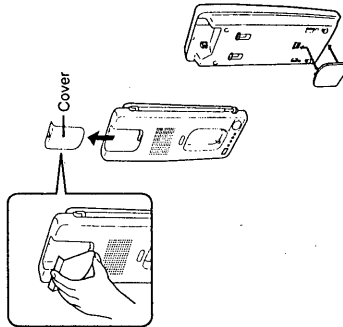
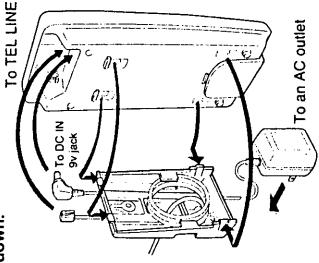
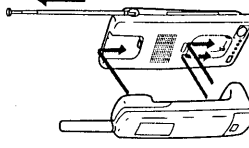
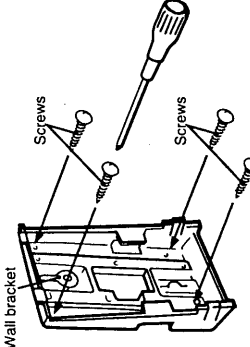
- 3 Follow the instructions of the on-line service.

Instructions vary between different on-line services, but they will all ask you to enter certain numbers from the handset of your phone.

After you press TALK to disconnect the call, the telephone returns to normal pulse dialing. If you want to call another on-line service, you have to do this procedure over again from the beginning.

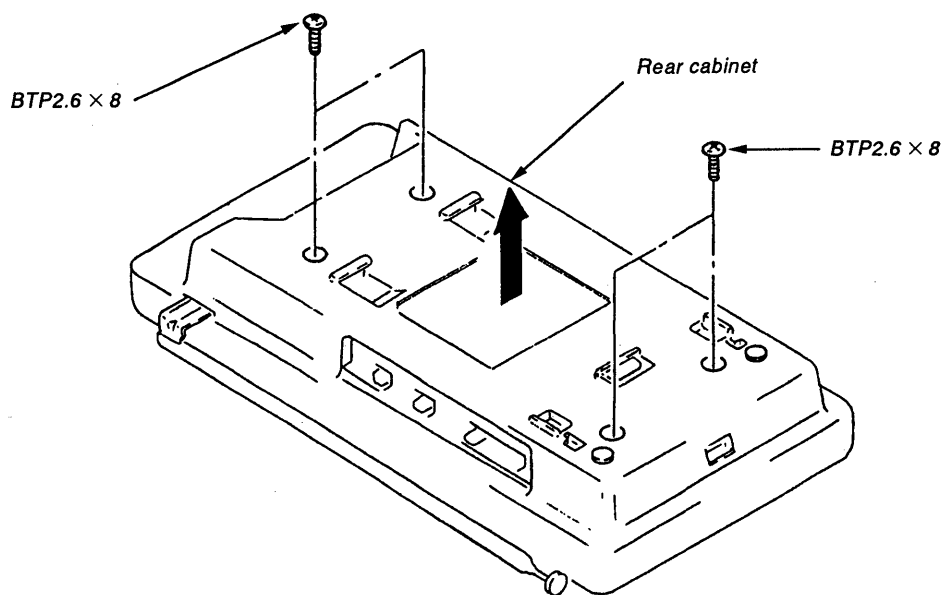


Mounting Your Phone on the Wall

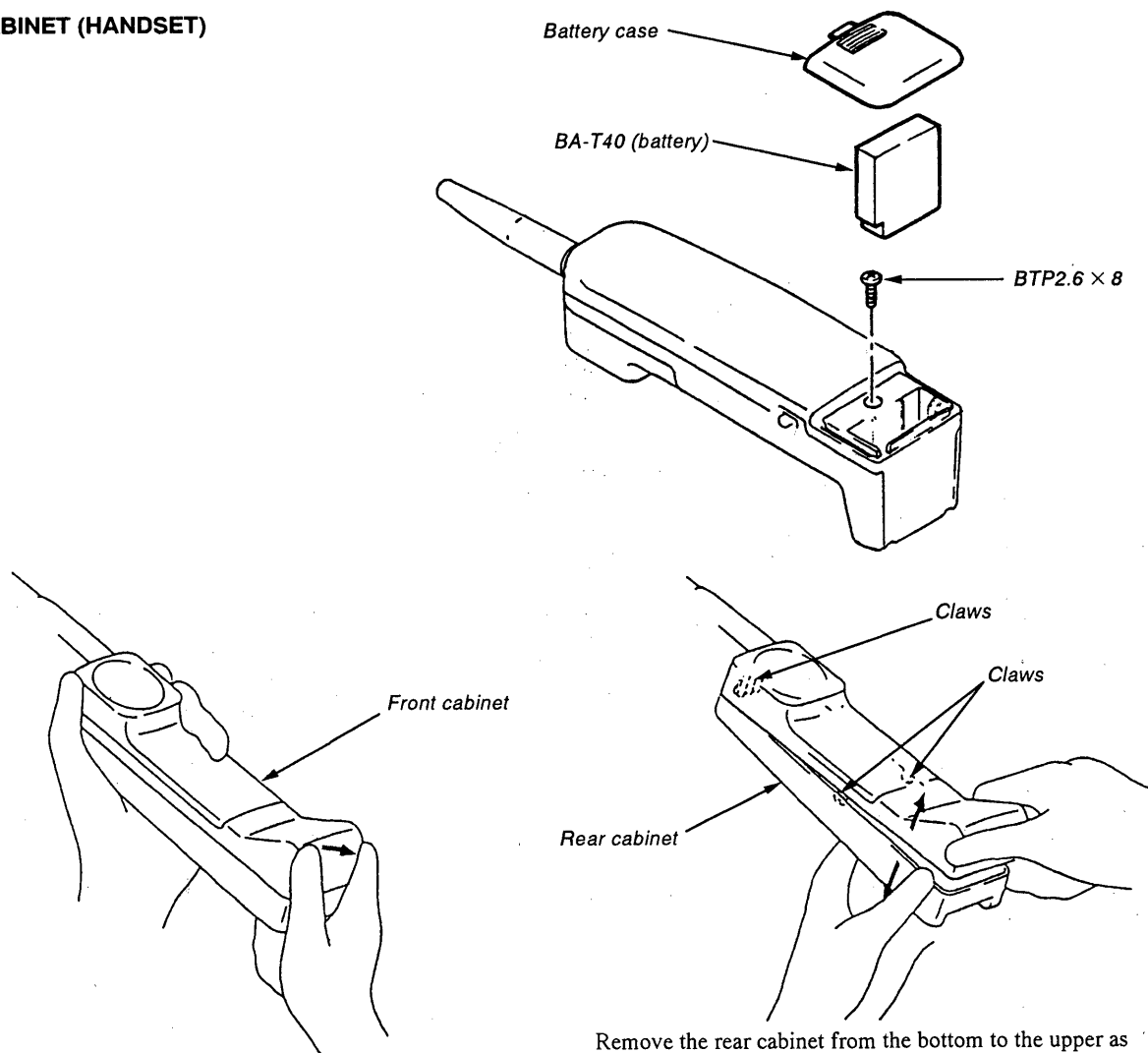
1 Attach the AC adaptor cord and the telephone line cord to the wall bracket. 	2 Hook the bracket to the modular jack. Store the extra cord inside the wall bracket as shown in the illustration. 
3 Remove the cover from the top of the base unit. Then attach it to the rear of the base unit. 	4 Align the slots on the base unit with the inserts on the bracket. Then attach the base unit to the bracket by gently pushing down. 
5 Place the handset on the base unit. Then extend the antenna fully. 	In step 2, if you cannot hook the bracket, attach it directly to the wall. Use the supplied screws. 

SECTION 2 DISASSEMBLY

2-1. REAR CABINET (BASESET)



2-2. REAR CABINET (HANDSET)



Open the bottom first by twisting the front cabinet as shown in the figure.

Remove the rear cabinet from the bottom to the upper as shown in the figure.
(The rear cabinet is assembled by five claws.)

SECTION 3 TEST MODE

3-1. GENERAL DESCRIPTION OF TEST MODE

The following contents can be checked by using this test mode.

1. BASESET

- ① Does the ringer (excluding receiving detection) ring? (Confirm when the test mode is started up.)
- ② Does the dial transmission transmit? (Confirm when the test mode is started up.)
- ③ Is the handset line wire speech quality normal? (This can be checked without connecting any data facility by combining test mode 1 and the handset test mode <3><#>.)
- ④ Is the data transmission with the handset normal? (This can be checked by combining test mode 1 and the handset test mode <5><#>.)
- ⑤ Confirmation of carrier detection operation (Test mode 2: It can be confirmed whether a radio wave from the handset has been transmitted or not.)
- ⑥ Confirmation of charge detection operation (Test mode 2)

3. HANDSET

- ① Does the ringer ring? (Confirm when the test mode is started up.)
- ② Test of the key and the LED. (Test mode <1><#>)
- ③ Is the line wire speech quality with the handset normal? (This can be checked without connecting any data facility by combining baseset test mode 1 and the handset test mode <3><#>.)
- ④ Is the data transmission with the handset normal? (This can be checked by combining the test mode <5><#> and baseset test mode 1.)
- ⑤ Does each port of the microcomputer work normally in reception stand-by mode? (Test mode <4><#>)
- ⑥ Does each input port of the microcomputer work normally when speaking? (Test mode <3><#>)
- ⑦ Clear all memories. (Test mode <7><#>)

3-2. TEST MODE

A. BASESET side

- **Note** : INTERCOM KEY : SPP-97
PAGE KEY : SPP-77

1. How to enter the test mode

- ① Turn OFF the ringer SW(SPP-97).
- ② Set the dial mode SW to P.
- ③ Connect an AC adaptor while pressing the INTERCOM (PAGE) key.

↓

Switch the dial mode key from P to T and then to P again while pressing the INTERCOM (PAGE) key.
(DIAL MODE SW P→T→P)

↓

Release the INTERCOM (PAGE) key.

(A ringing sounds, and the ringer can be checked.)

※ Start the normal mode when releasing the INTERCOM (PAGE) key before completing the above operation.

↓

RAM pattern clear

↓

Closing of the telephone line (LINE LED lights on)

↓

The microcomputer sends data to the dialer IC in the following order.

3→MC→1→2→3→4→5→6→7→8→9→*→0→#→RD

Pulse is output to the line. DTMF is output to the line.

↓

DIAL MODE SW { P.....Test mode 1
 ↑
 T.....Test mode 2

(Change the test mode when the dial mode SW is switched during each test mode.)

● How to release the test mode

Pull out the AC adaptor from the baseset.

2. Test mode 1.

Set each port status to handset line wire speech status by turning TX ON at the set channel (refer to item 4 for channel setting). When an ID teletext (exclusively for the test mode) has been received normally in this mode, test mode 1 takes over the handset test mode <5><#> by sending back the same content teletext (refer to page 34).

3. Test mode 2

Turn TX OFF and confirm whether there is a SQ signal status at the setting channel and whether there is a charge detection or not.

① SQ signal test

Continuously transmit DTMF [1] from the dialer while the SQ detecting port (pin ⑤) is in carrier status (H level).

② Charge detection test

Continuously transmit [#] with DTMF from the dialer while the charge detecting port (pin ⑥) is in charging status (H level).
(The SQ signal test ① is not performed while the charge detecting port is in charge status.)

4. Channels (Refer to page 25)

The channel has been changed in the following order by pressing of the INTERCOM (PAGE) key in test modes 1 and 2.
(The initial channel is T6.)

T6 → T5 → T4 → T3 → T2 → T1 → 10 → 9 → 8 → 7 → 6 → 5 →
4 → 3 → 2 → 1

- **Note** : After confirmation of the test modes, the normal operation status can be obtained by setting the handset to the charge table and writing in the ID to check the operation.

B. HANDSET side

1. How to enter the test mode

Press the <TALK> key while pressing the <7>, <0> and <CHANNEL> keys in the idle status. At this time, after ringing has been heard, start up the following test modes <3> <#> with channel T6.

- **How to release the test mode**
Remove the batteries and replace them.

2. Explanation of each test mode

The mode is interrupted and the unit is set to the mode assignment stand-by status when the <FLASH> key has been pressed during each mode.

<1> <#> means pressing the <#> key after pressing the <1> key.

① <1> <#> : Key and LED test

- 1) At first, all 10 LEDs, the TALK LED and DIAL LED (1 – 9, *, 0, #) will light up.
- 2) The KEY (SPP-77 is the < INTERCOM > KEY SKIP) and LED tests are carried out in the following order.
- 3) The TALK LED is synchronized with the TALK KEY TOUCH sound and the light goes out.
- Ⓐ By pressing the DIAL KEYS in sequence (1 – 9, *, 0, #), all DIAL LEDs will go out at the point where the last “#” is pressed, in synchronization with the KEY TOUCH sound.
- Ⓑ Each LED among the 10 LEDs (1 – 9, 0) that corresponds to the synchronization of the KEY TOUCH sound will go out.
TALK → INTERCOM → FLASH → 1 – 9 → * → 0 → # → A – C → RECALL → VOL/PGM → MUTE → REDIAL/PAUSE → CHANNEL
- Ⓒ At the point where all KEYS are pressed, a completion sound will ring, after which there will be a period for waiting for a command.
- ※ As the KEYS are accepted only in the above order during testing, operation cannot be interrupted with the < FLASH > KEY.

② <2> <#> : Channel setting

The following channel can be set depending on the key pressed after the <#> key. (The channel number is HEX displayed with 1 – 4 of the 10 LEDs.)

CH	KEY	LED			
		1	2	3	4
1	1	○	○	○	○
2	2	●	○	○	○
3	3	○	●	○	○
⋮	⋮	⋮	⋮	⋮	⋮
9	9	○	○	○	●
10	1, 0	●	○	○	●
T1	✕ 1	○	●	○	●
⋮	⋮	⋮	⋮	⋮	⋮
T6	✕ 6	●	●	●	●

(Refer to page 34)

③ <3> <#> : Speech status and input system test

Set each port status to handset line wire speech status by turning TX ON at the set channel. (The volume level can be switched with the <VOL/PGM> key.)

Status of each input system Displays will be shown with the following LEDs.
(Lights up at H level)

CHANNEL LED IC701

- 1 : (53 pin) SQ detection
- 2 : (54 pin) PLL LDA (Reception PLL, lock confirmation)
- 3 : (55 pin) PLL LDB (Sending PLL, lock confirmation)
- 4 : (52 pin) MODE SW
- 5 : (21 pin) BATT LOW
- 6 : (27 pin) BATT DET
- 7 : (64 pin) KEY INT
- 8 : (29 pin) KEY INT
(TALK, INTERCOM, A – C, RECALL, VOL/PGM, REDIAL/PAUSE)
- 9 : (61 pin) CHARGE detection

④ <4> <#> : Reception stand-by and input system test

Set each port status to the reception stand-by status by turning TX OFF at the set channel and perform an input system test in the same manner as <3> <#> described above.

⑤ <5> <#> : **Teletext transmission/reception test**

Turn TX ON and send the following teletext at the set channel. The LED <10> will light up for 70msec., when the sent teletext data is normally returned from the baseset test mode 1. Furthermore, the LED <1> will light up when the SQ detecting port has a carrier.

The number of reception errors of the teletext returned from the baseset for 1000 transmission is recorded and will be displayed by binary indication with the 10 LEDs. (It is normal when the number of reception errors is less than 64 times : No more than 6 LEDs should light up.)

Example : In case of 10 times, the display lights up as shown to the right.

1	2	3	4	5	6	7	8	9	0
○	●	○	●	○	○	○	○	○	○

⑥ <7> <#> : **RAM all clear**

The RAMs are all cleared and the test mode will be completed, after which the normal mode will be entered. (The dial memories are also cleared.)

Note : Remove and replace the batteries to keep the dial memories without setting to <7> <#> .

SECTION 4 ELECTRICAL ADJUSTMENTS

4-1. BASESET SECTION

- Apply 9V dc from regulated DC power supply.
- Perform the adjustments at 6-CH as a rule.
- See page 15 to 16 for setting Test Mode.

TX Section Adjustments

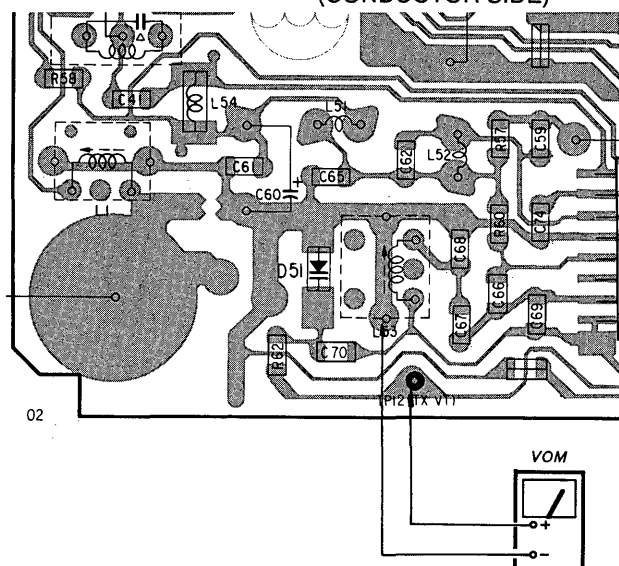
Setting : Set to basetest test Mode 1.

Adjustment Location : Base main board

1. TX VT Adjustment

Adjust the L53 for 1.5V reading on the VOM.

(CONDUCTOR SIDE)



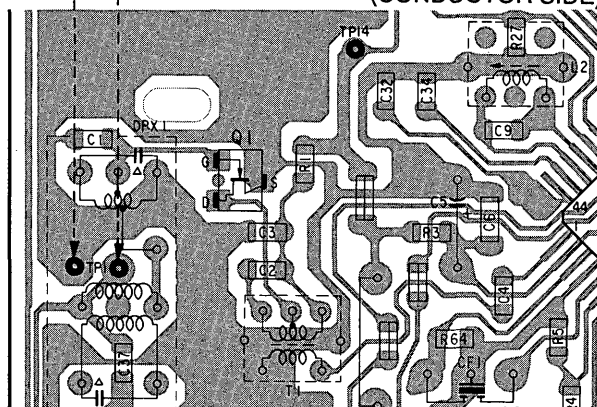
2. TX POWER Adjustment

Adjust the RV51 for 350 μ W reading on the rf power meter.

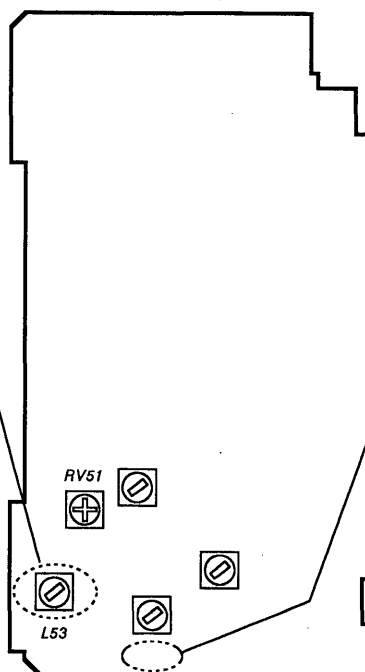
rf power meter

(Input impedance : 50 Ω)

(CONDUCTOR SIDE)

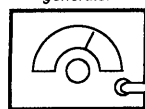


[BASE BOARD]
(COMPONENT SIDE)

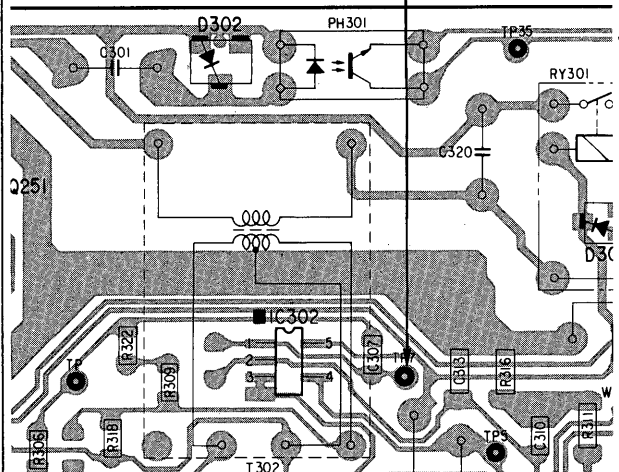


- Perform the adjustment at 6-CH as a rule.

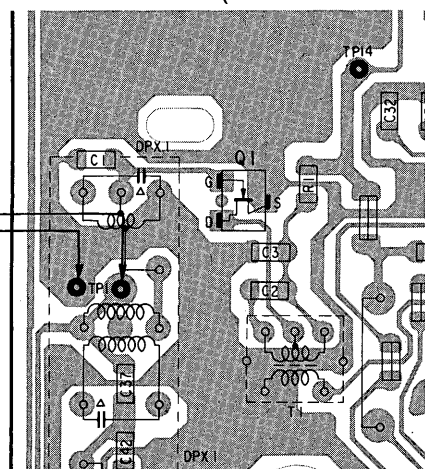
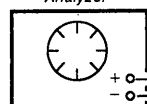
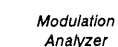
FM rf signal
generator



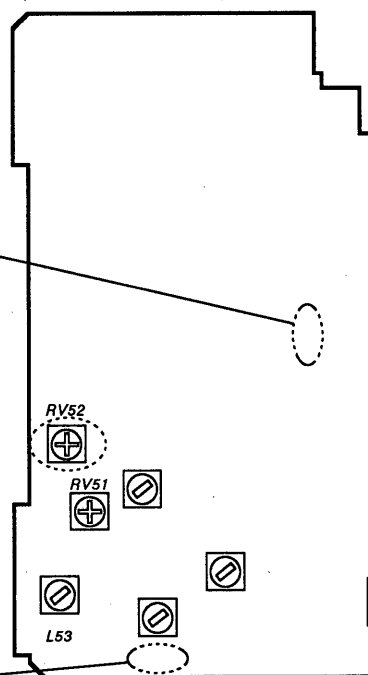
(CONDUCTOR SIDE)



(CONDUCTOR SIDE)



【BASE BOARD】
(COMPONENT SIDE)



① FM rf signal generator condition :

Deviation : 1kHz

at the RV52 for the $1.0\text{kHz} \pm 0$.

Adjust the RV52 for the $1.0\text{kHz} \pm 0.1\text{kHz}$ reading on the Modulation Analyzer.

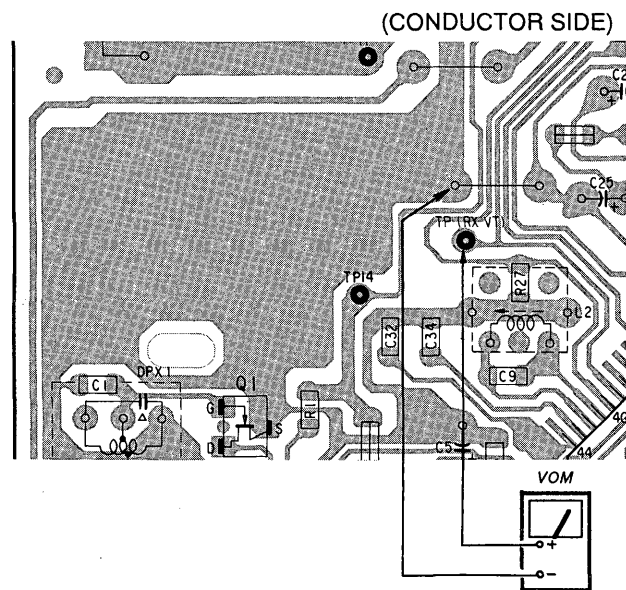
RX Section Adjustments

Setting : Set to baseset test Mode 1.

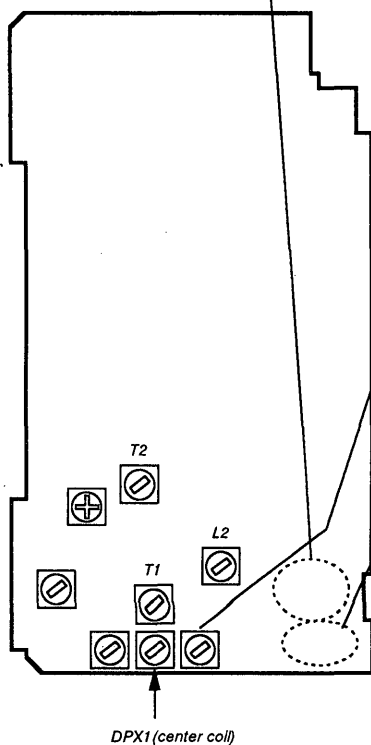
Adjustment Location : Base main board

4. RX VT Adjustment

Adjust the L2 for 1.2V reading on the VOM.



[BASE BOARD]
(COMPONENT SIDE)

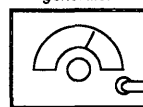


5. RX SENSITIVITY Adjustment

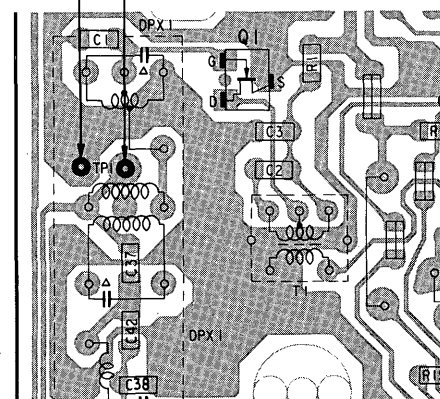
- Perform the adjustment at 4-CH as a rule.

Setting :

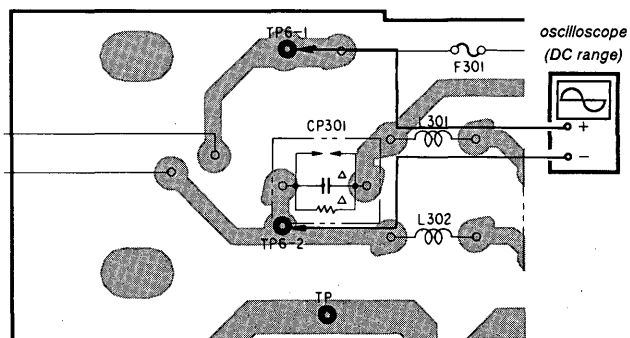
FM rf signal
generator



(CONDUCTOR SIDE)



(CONDUCTOR SIDE)



Procedure :

- FM rf signal generator condition:

Carrier frequency : 49.77MHz
Modulation frequency : 1kHz
Deviation : ± 3 kHz
Output level : 60dB (1mV) (EMF)

Adjust the T2 for the maximum reading on the oscilloscope.
(Furthermore, also adjust T502 so that a distortion becomes minimum.)

- FM rf signal generator condition:

Carrier frequency : 49.77MHz
Modulation frequency : 1kHz
Deviation : ± 3 kHz
Output level : 0dB (1 μ V) (EMF)

- Adjust the T1 for the maximum reading on the oscilloscope.
- Adjust the DPX1(center coil) for the maximum reading on the oscilloscope.

4-2. HANDSET SECTION

- Apply 4V dc from regulated DC power supply.
- Perform the adjustments at 6-CH as a rule.
- See pages 15 to 16 for setting Test Mode.

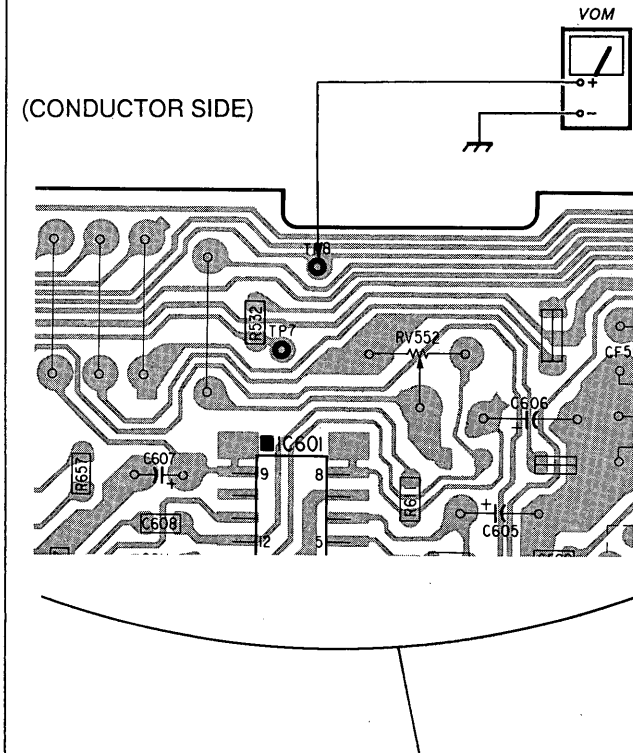
TX Section Adjustments

Setting : Set to Handset Test Mode.

Adjustment Location : Hand main board

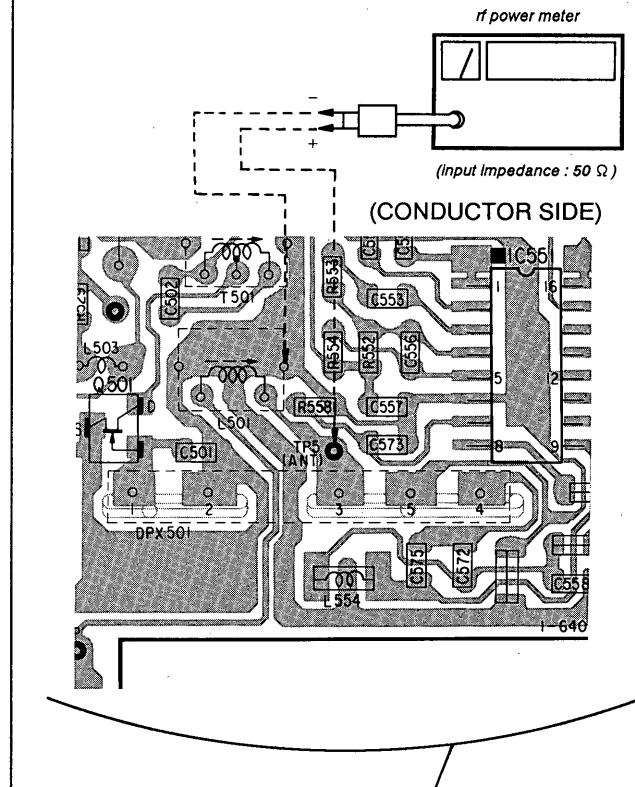
1. TX VT Adjustment

- 1) Connect VOM to test point TP-8 on hand main board.
- 2) Adjust the L553 for 1.5V reading on the VOM.

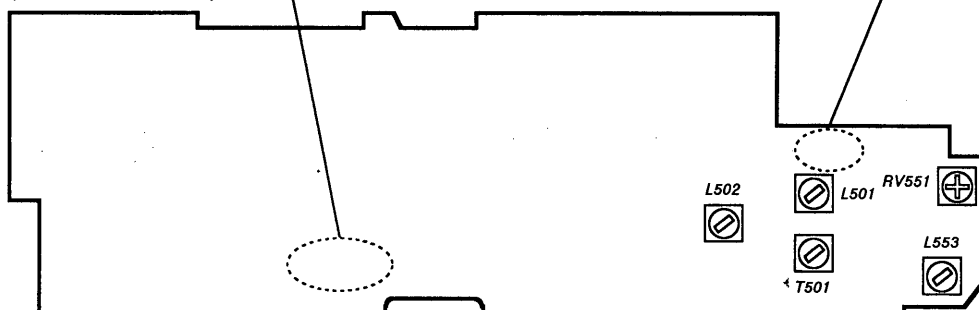


2. TX POWER Adjustment

Adjust the RV551 for 1100 μ W reading on the rf power meter.



[HAND MAIN BOARD]
(COMPONENT SIDE)

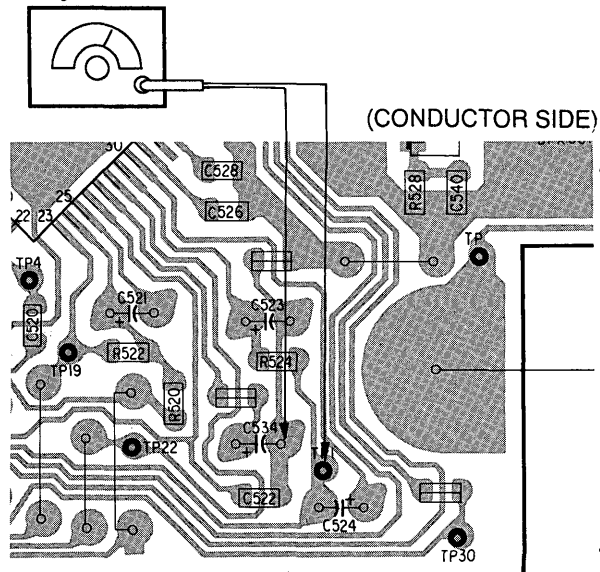


3. TX MODULATION SENSITIVITY Adjustment

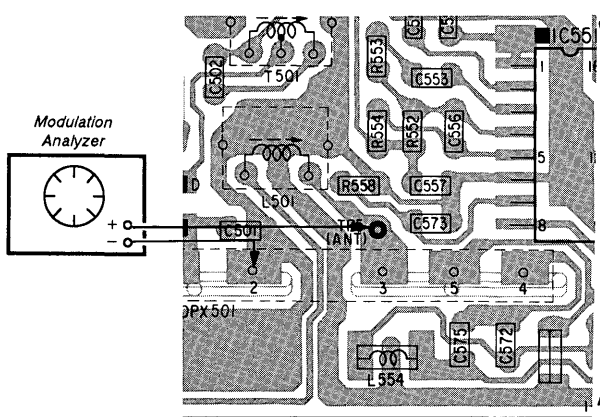
- Perform the adjustment at 6-CH as a rule.

Setting :

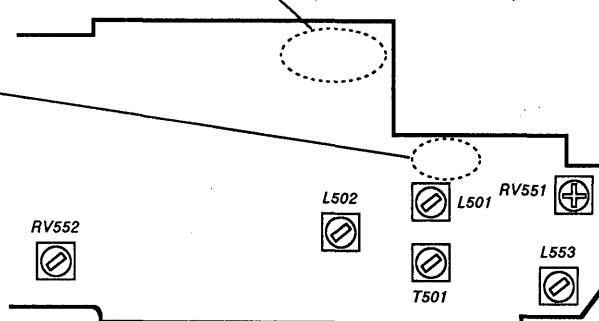
FM rf signal
generator



(CONDUCTOR SIDE)



[HAND MAIN BOARD]
(COMPONENT SIDE)



Procedure :

- ① FM rf signal generator condition:

Modulation frequency : 1kHz

Deviation : 1kHz

Output level : - 64dBm

Adjust the RV552 for the 1.0kHz $\pm$ 0.1kHz reading on the Modulation Analyzer.

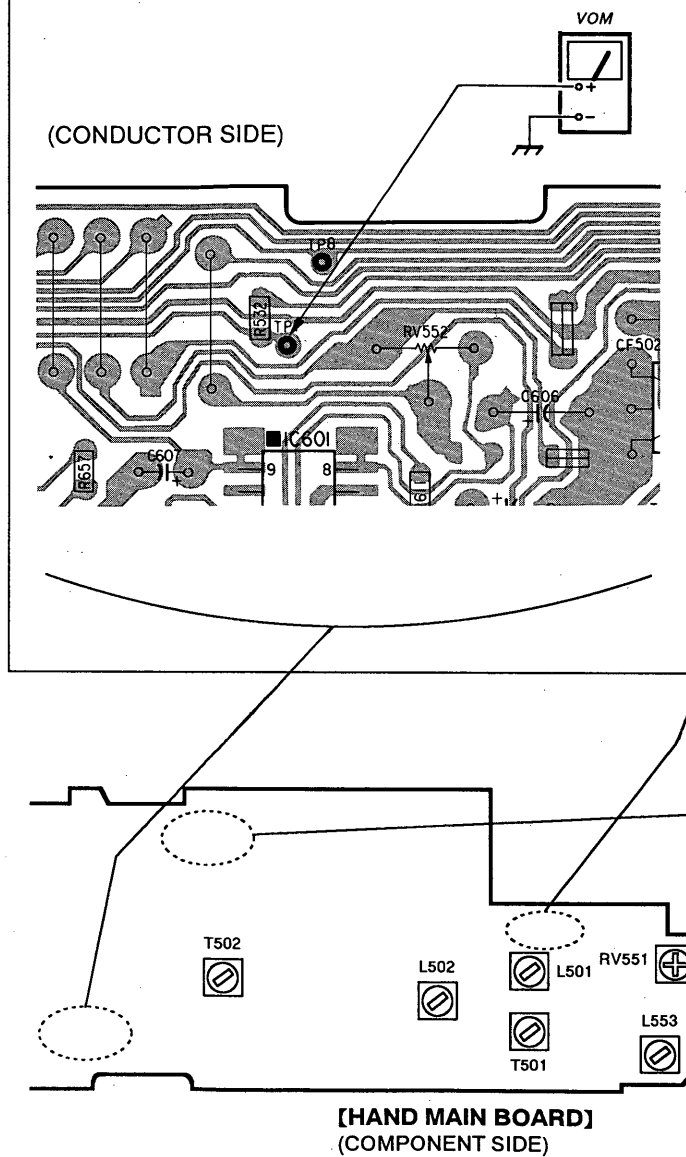
RX Section Adjustments

Setting : Set to Handset Test Mode.

Adjustment Location : Hand main board

4. RX VT Adjustment

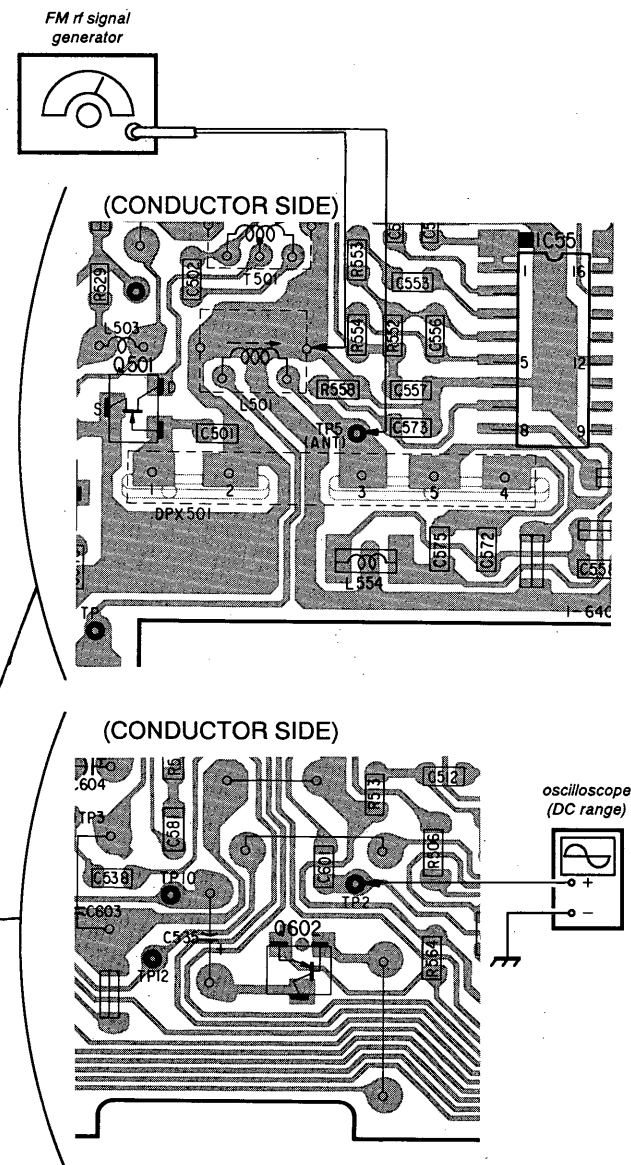
Adjust the L502 for 1.2V reading on the VOM.



5. RX SENSITIVITY Adjustment

● Perform the adjustment at 4-CH as a rule.

Setting :



Procedure :

① FM rf signal generator condition :

Carrier frequency : 46.71MHz
 Modulation frequency : 1kHz
 Deviation : ± 3 kHz
 Output level : 60dB (1mV) (EMF)

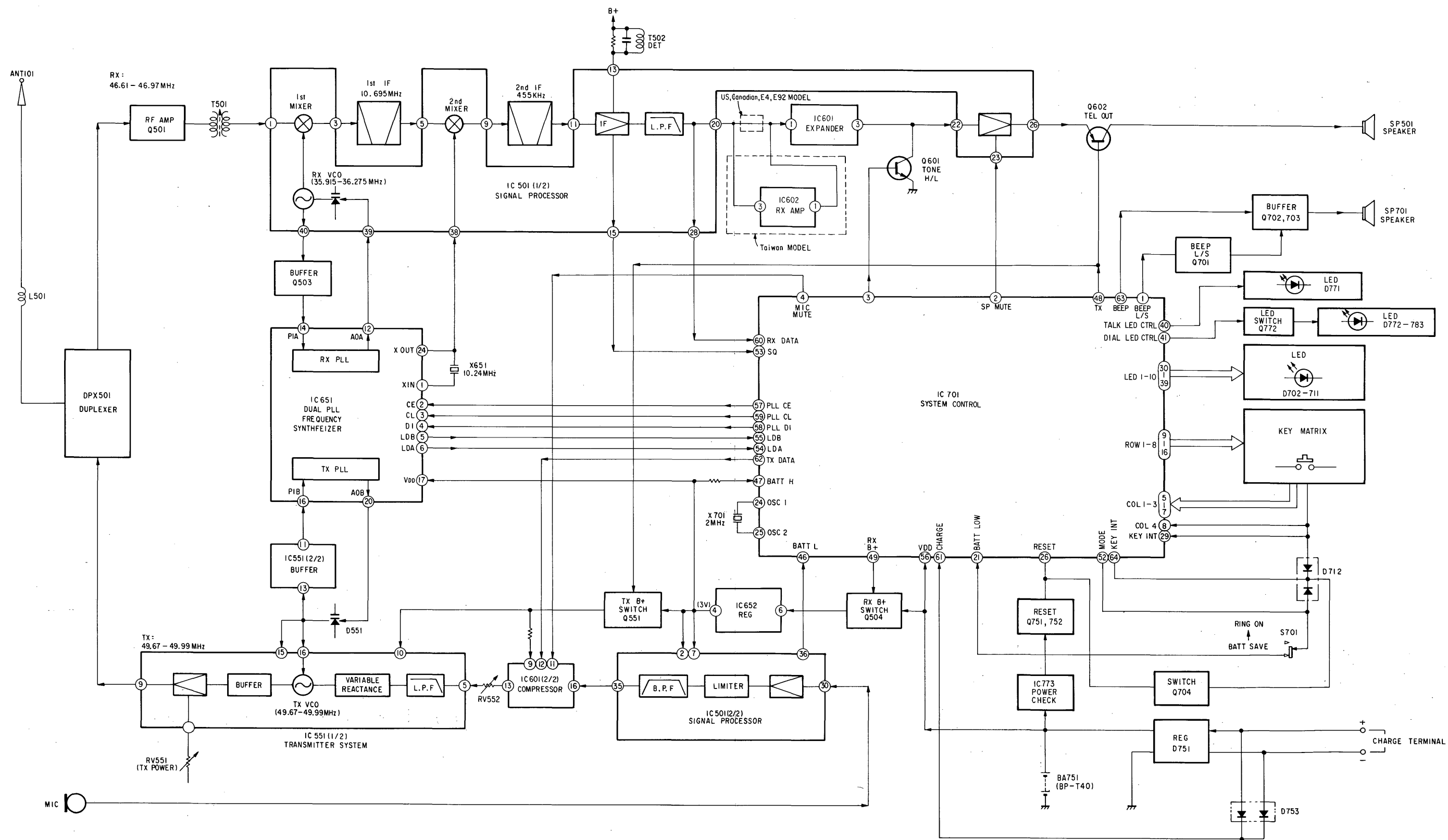
Adjust the T502 for the maximum reading on the oscilloscope.
 (Furthermore, also adjust T502 so that a distortion becomes minimum.)

② FM rf signal generator condition :

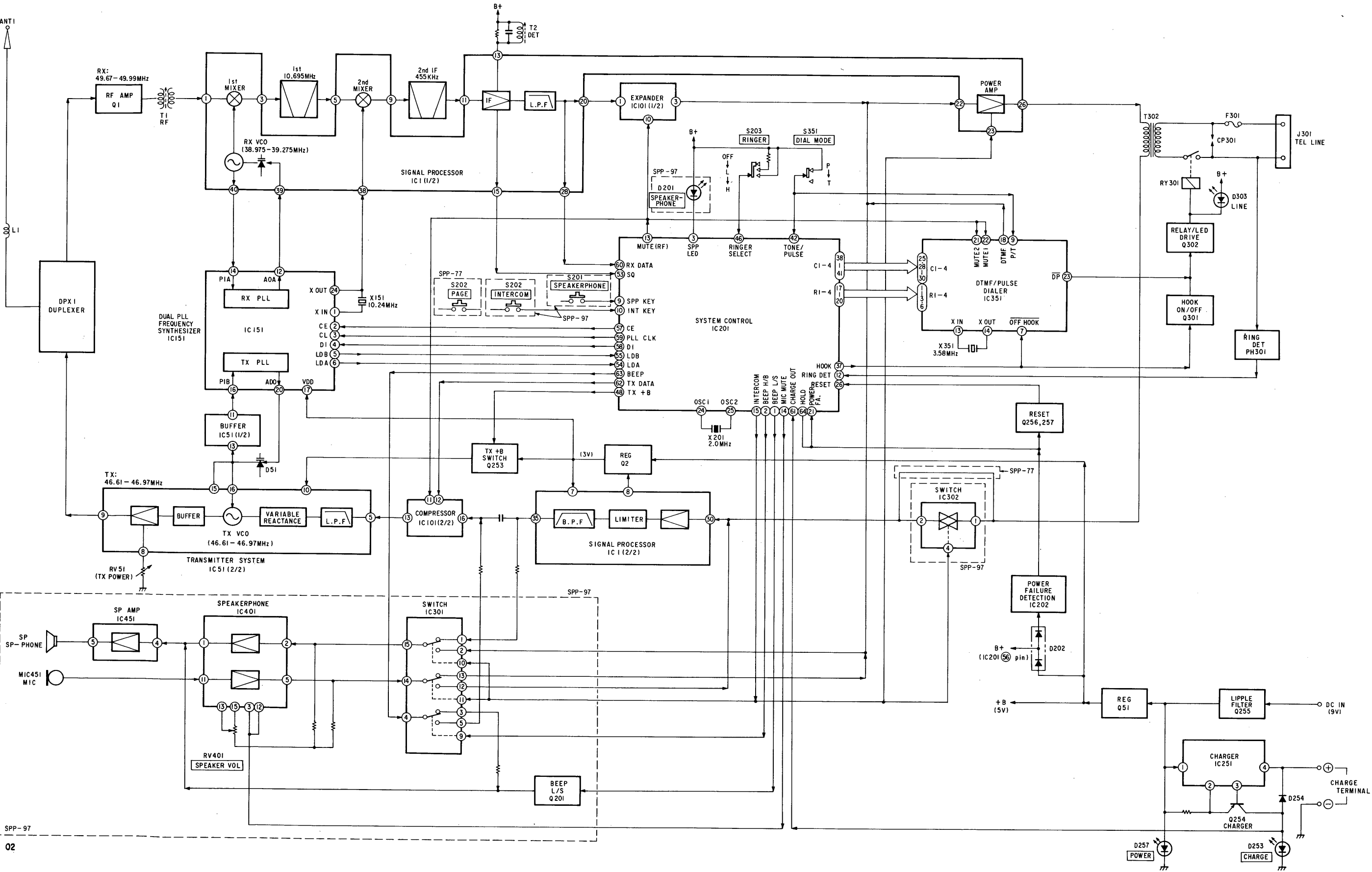
Carrier frequency : 46.71MHz
 Modulation frequency : 1kHz
 Deviation : ± 3 kHz
 Output level : 0dB (1 μ V) (EMF)

Adjust the T501 for the maximum reading on the oscilloscope.

5-1. BLOCK DIAGRAM (HANDSET SECTION)



5-2. BLOCK DIAGRAM (BASESET SECTION)



SECTION 6 IC PIN DESCRIPTION

1. IC201 LC66506 (BASESET CPU)

Pin No.	Pin Name	I/O	Description
1	BEEP L/S	O	Beep L/S select. Large when ACT is L.
2	BEEP H/B	O	Beep hand/base select. Hand when ACT is L.
3	SPP LED	O	Speakerphone LED drive.
4	—	—	To GND.
5 – 8	TEST	I	Input for test modes.
9	SPP KEY	I	Speakerphone key input terminal.
10	INT KEY	I	Intercom key input terminal.
11	SCK 1	I	Input for test mode.
12	RING DET	I	Ring detector. L when ring detected.
13	RF MUTE	O	Mute when ACT is $\begin{cases} \text{DATA} : \text{L} \\ \text{TEL} : \text{H} \end{cases}$
14	SP PHONE MUTE	O	Speakerphone mute. Mute when ACT is H.
15	INT MUTE	O	Intercom mute. $\begin{cases} \text{Internal line} : \text{L} \\ \text{Outside line} : \text{H} \end{cases}$
16	SP MUTE	O	Speaker amplifier mute. Mute when ACT is H.
17 – 20	R1 – R4	O	Key output terminals.
21	INT 2	I	Power interruption detection.
22	TEST	—	TEST (Vss).
23	Vss	—	Power supply terminal (GND).
24	OSC 1	I	Internal oscillator. 2MHz.
25	OSC 2	O	External oscillator. 2MHz.
26	RESET	I	Reset.
27 – 29	INT 3 – 5	—	To GND.
30	TEST OUT (CHARGE)	O	Charge test out terminal.
31	TEST OUT (SQ)	O	SQ test out terminal.
32 – 33	—	—	To GND.
34 – 36	—	—	To GND.
37	HOOK	O	Hook out. L when OFF hook.
38 – 41	C1 – 4	O	Column output terminals.
42	TONE/PULSE	I	Dial mode switching. L : TONE, H : PULSE
43, 44	95/85/75	I	Model select switching. (Same as hand set)
45	TEST	I	Test input terminal.
46	RINGER SEL	I	Ringer VOL switching. H/L/OFF
47	—	—	To GND.
48	TX +B	O	Transmission system power control.
49	RX +B	O	Reception system power control.
50 – 52	—	—	To GND.
53	SQ	I	Carrier detection. out — of — area detection. H when carrier detected.
54	LDA	I	PLL LDA. (RX) H : lock
55	LDB	I	PLL LDB. (TX) H : lock
56	VDD	—	Power supply terminal (+B).
57	PLL CE	O	

Pin No.	Pin Name	I/O	Description
58	PLL DI	O	PLL serial data output terminal. RX data input terminal. Charge detection. H when charge detected. TX data output terminal.
59	PLL CLK	O	
60	RX DATA	I	
61	CHARGE OUT	I	
62	TX DATA	O	
63	BEEP	O	Beep output.
64	HOLD	I	To ②① pin. (Power interruption detection.)

2. IC701 LC66558A (HANDSET CPU)

Pin No.	Pin Name	I/O	Description
1	BEEP L/S	O	Beep L/S select. Large when ACT is L.
2	SP MUTE	O	Speaker mute. Mute when ACT is L.
3	TONE H/L	O	TEL VOL control. Large when ACT is L.
4	MIC MUTE	O	Microphone mute. Mute when ACT is L.
5 – 8	COL 1 – 4	I	Key input terminals.
9 – 16	ROW 1 – 8	O	Key output terminals.
17 – 20	–	O	To VDD.
21	BAT • LOW	I	Battery low detect. L : LOW
22	TEST	–	Test (Vss).
23	Vss	–	Power supply terminal (GND).
24	OSC 1	I	Oscillator. 2MHz. Reset. Battery pack detect. To GND.
25	OSC 2	O	
26	RESET	I	
27	BAT. PAT. DET	I	
28	–	I	
29	KEY INT	I	Key input terminal.
30 – 39	10CH LED 1 – LED 10	O	Lighting when ACT is L.
40	DIAL LED CTRL	O	Lighting when ACT is L.
41	TALK LED CTRL	O	Lighting when ACT is L.
42	70/75/77/85/95/97	–	Model selection. { H : 77/97 L : 70/75/85/95
43	70/75/77/85/95/97	I	Model selection. { H : 85 L : 70/75/77/95/97
44	70/75/77/85/95/97	I	Model selection. { H : 70/75/97 L : 85/95/97
45	TEST IN	I	Test input when ACT is H.
46	BATT L	I	Battery life detection L.
47	BATT H	I	Battery life detection H.
48	TX +B CTRL	O	Transmission system power control. ON when L.
49	RX +B CTRL	O	Reception system power control. ON when L.
50, 51	–	O	To VDD.
52	MODE	I	Mode switch. Battery save when L.
53	SQ	I	Carrier detection. out – of – area detection. H when carrier detected.
54	LDA	I	PLL LDA. (RX) H : lock

Pin No.	Pin Name	I/O	Description
55	LDB	I	PLL LDB. (TX)H : lock
56	VDD	—	Power supply terminal (+B).
57	PLL CE	O	} PLL serial data output terminal.
58	PLL DI	O	
59	PLL CL	O	
60	RX DATA	I	RX data input terminal.
61	CHARGE	I	Charge detection. H when charge detected.
62	TX DATA	O	TX data output terminal.
63	BEEP(R/K)	O	Beep output (Ring/key INT).
64	KEY INT	I	Key input terminal.

3. IC151, 651 (LC7152)

LC7152 is a PLL frequency synthesizer IC for the cordless telephone.

Pin No.	Pin Name	Description
1 24	X IN X OUT	Quartz oscillator connection (10.24MHz).
2	CE	This is a terminal which makes the serial data high level when inputting the serial data to LC7152.
3	CL	This a clock which synchronizes the serial data with data when inputting the serial data to LC7152.
4	CI	This an input terminal for the serial data which is transmitted from the controller to LC7152.
5	$\overline{\text{LDB}}$	This outputs the locking/unlocking status of PLL. When locked : Open When unlocked : Low The respective phase error detection range of the locking/unlocking valves will be decided according to serial data UL0 and UL1.
6	$\overline{\text{LDA}}$	The phase error extension when outputting will be decided according to serial data UE0, UE1 and UE2.
7 18	CA CB	This is for the higt-speed lock up circuit.
8	TEST	This is the test terminal of LC7152. (This is used in Vss or open status.)
9 23	PDA 2 PDB 2	This is the charge pump output of PLL and outputs a phase error signal of PLL only when an unlocking is detected. Detection unlocking range will be decided according to the serial data UL0 and UL1. This will be high impedance when a phase error is lower than the detection un-locking range, and a phase error signal will be output from the main charge pump only. The output pulse of the phase signal is of the same polarity as that of the main charge pump.

Pin No.	Pin Name	Description									
10	PDA 1	This is the charge pump output of PLL and always outputs a phase error signal of PLL. A high level will be output from the charge pump when a frequency (f_{osc}/N) which has been divided by a local signal by N is higher than the standard frequency (f_{ref}), and a low level will be output as a phase error when it (f_{osc}/N) is lower than the standard frequency (f_{ref}). Furthermore, the impedance will be high when a frequency (f_{osc}/N) is the same value as the standard frequency (f_{ref}). • $f_{osc}/N > f_{ref}$ or leading → Positive Pulse • $f_{osc}/N < f_{ref}$ or lagging → Negative Pulse • $f_{osc}/N = f_{ref}$ and coincidence → High – Impedance (※ SB = “1” : PDB1 → High – Impedance)									
22	PDB 1										
11 12 20 21	AIA AOA AIB AOB	This is the MOS channel transistor for the PLL filter. Output resisting pressure of AOA and AOB are 13V.									
13 19	$\overline{\text{OUT A}}$ $\overline{\text{OUT B}}$	This latches OA and OB serial data transmitted from the controller and inverses and outputs data.									
14	PIA	This is the A side programmable divider. The input frequency bands are as follows : <table border="1"> <thead> <tr> <th>FA=“0”</th><th>FA=“1”</th><th>VDD</th></tr> </thead> <tbody> <tr> <td>1.5 – 23MHz</td><td>20 – 60MHz</td><td>2.8 – 4.5V</td></tr> <tr> <td>1.5 – 23MHz</td><td>20 – 160MHz</td><td>4.0 – 5.5V</td></tr> </tbody> </table> FA=Serial data Divided number is decided according to serial data DA0 – DA15. N=256 – 65535 divided	FA=“0”	FA=“1”	VDD	1.5 – 23MHz	20 – 60MHz	2.8 – 4.5V	1.5 – 23MHz	20 – 160MHz	4.0 – 5.5V
FA=“0”	FA=“1”	VDD									
1.5 – 23MHz	20 – 60MHz	2.8 – 4.5V									
1.5 – 23MHz	20 – 160MHz	4.0 – 5.5V									
15 17	Vss VDD	This the power source terminal of LC7152. Be careful as the input frequency band varies depending on the power voltage.									
16	PIB	This is the B side programmable divider. The input frequency bands are the same as those of PIA. FB(– FA) : Depends on serial data The divided number is decided according to serial data DB0 – DB15. N=256 – 65535 divided Serial data : It will be in stand-by mode with SB. SB= $\begin{cases} \text{“0”} : \text{in operation} \\ \text{“1”} : \text{stop (PIB terminal : pulled down to Vss)} \end{cases}$									

4. IC351 LC7367JM (BASESET)

Pin No.	Pin Name	Description
1 – 3 6 25 28 – 30	R1 – R4 C1 – C4	These terminals are row/column input pins. High active input. Built-in P channel transistor for key board scanning and built-in N channel transistor for pull-down. Turn off P channel transistor and turn on N channel transistor at the time of ON-HOOK mode.
7	$\overline{\text{OFF-HOOK}}$	This is the hook switch input terminal. “H” level=ON-HOOK “L” level=OFF-HOOK
8	DPR	This is the dial pulse rate switching input terminal. “H” level=20pps “L” level=10pps
9	P/T	This is the pulse/tone switching input terminal. “H” level=pulse mode “L” level=DTMF mode
10	BMR	This is the make-ratio switching input terminal. “H” level=33.2% “L” level=40%
13 14	X IN X OUT	For standard frequency generation. A 3.579545MHz crystal oscillator is used. Since the feed-back resistor and capacity which consist of this oscillation circuit are built-in to this terminal, you can generate a standard frequency by connecting a crystal oscillator. It is necessary to apply a capacity of approximately 30pf to each pin when using a ceramic oscillator.
15 16	VDD Vss	Power application pin.
17	MODE-OUT	Pulse. DTMF mode output. Pulse mode= “L” level DTMF mode= “H” impedance
18	DTMF	DTMF signal is output. This is the emitter follow output from the npn transistor.
21	$\overline{\text{MUTE 2}}$	Mute output. This terminal operates at the time of DTMF mode. $\overline{\text{MUTE 1}}$ and the wired OR can be measured.
22	$\overline{\text{MUTE 1}}$	Mute output. This terminal operates at the time of pulse mode. $\overline{\text{MUTE 2}}$ and the wired OR can be measured.
23	$\overline{\text{DP}}$	This is the dial pulse output terminal.
24	K-TONE	This terminal outputs 1243Hz/50ms as a K-TONE (confirmation sound) when the key is pressed down at the time of pulse mode.

5. IC1, 501 LA8606M

Pin No.	Pin Name	Description
1 44	1st MIX-IN1 1st MIX-IN2	1st MIX input terminals.
2	HF-Vcc	HF for power supply terminal.
3	1st MIX-OUT	1st MIX output terminal.
4	HF-GND	HF-GND terminal.
5	2nd MIX-IN	2nd MIX input terminal.
6 7 8	EXT. Reg-ADG EXT. Reg-OUT EXT. Reg-CONT	This is a terminal which sets the out put voltage of pin ⑦ with the resistor between pins ⑥ and ⑦ and the resistor between pin ⑥ and GND.
9	2nd MIX-OUT	2nd MIX output terminal.
10	Vref 1	Vref terminal.
11	IF-IN	IF amp input terminal.
12	S-DET	SX-9 output terminal.
13	QUAD COIL	Phase coil connection terminal for quad latch detection.
14	NOISE-DET	Noise DET terminal.
15	SCHMITT-OUT	Schmitt output terminal.
16 17	NOISE-OUT NOISE-IN	The noise filter consists of pins ⑩, ⑪ and an external CR.
18	DET. OUT	FM DET output terminal.
19 20 28	BUFF. IN BUFF. OUT DATA-OUT	Tertiary LPF consists of pins ⑲, ⑳ and an external CR.
21	½Vcc	Reference voltage terminal for power amplifier.
22	PWR-IN	Power amplifier input terminal.
23	PWR-CONT	Power control terminal. The power amplifier is in operation mode when HIGH. Power mute when LOW.
24	LF-Vcc	Power for low frequency system.
25	LF-GND	GND for low frequency system.
26	PWR-OUT	Power output terminal.
27	PWR-NF	Power NF terminal.
29	PRE-REG	Reference voltage terminal for PRE-amplifier.
30	PRE-IN	PRE-AMP input terminal.
31	PRE-NF	PRE-AMP NF terminal.
32	ALC-DET	ALC detection/ALC limiter switching terminal limiter mode when pin ⑳ is grounded ALC mode when connected to CR.
33 34	FCH FCL	The HPF side cut-off frequency of BPF is decided by an external C and an internal resistor R.
35	BPF-OUT	BPF output terminal.
36	LED	LED connection terminal. LED-ON when Vcc voltage becomes less than +0.2V of EXT/REG-OUT (pin ②) voltage.

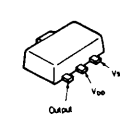
Pin No.	Pin Name	Description
37	2ND-OSC1	This is the 2nd local broadcast connection terminal. The colpitts type oscillator consists of an external crystal and C.
38	2ND-OSC2	
39	FROM PLL	The built-in varicap capacity is varied by applying DC voltage.
40	TO PLL	1st local broadcast oscillation buffer output.
41	1st-OSC1	The 1st local broadcast consists of an external crystal, L, and C.
42	1st-OSC2	
43	Vref 2	1st local broadcast, Vref terminal for 1st mix.

[FREQUENCY TABLE FOR EACH CHANNEL]

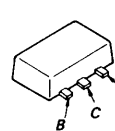
CH LED				CH	HANDSET		BASESET	
D1	D2	D3	D4		RX VCO(PIA) (MHz)	TX VCO(PIB) (MHz)	RX VCO(PIA) (MHz)	TX VCO(PIB) (MHz)
0	0	0	0	1	35.915	49.670	38.975	46.610
1	0	0	0	2	35.935	49.845	39.150	46.630
0	1	0	0	3	35.975	49.860	39.165	46.670
1	1	0	0	4	36.015	49.770	39.075	46.710
0	0	1	0	5	36.035	49.875	39.180	46.730
1	0	1	0	6	36.075	49.830	39.135	46.770
0	1	1	0	7	36.135	49.890	39.195	46.830
1	1	1	0	8	36.175	49.930	39.235	46.870
0	0	0	1	9	36.235	49.990	39.295	46.930
1	0	0	1	10	36.275	49.970	39.275	46.970
0	1	0	1	T1				
1	1	0	1	T2				
0	0	1	1	T3				
1	0	1	1	T4				
0	1	1	1	T5				
1	1	1	1	T6				

SECTION 7
DIAGRAMS

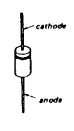
● Semiconductor Lead Layouts.

RH5VA32CA-T1
S-80727AL-AQ-T1

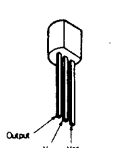
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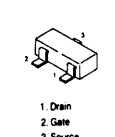
RD10E-L2



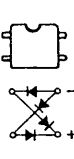
S-8053ALB



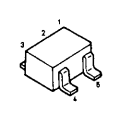
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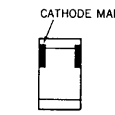
U05G4B48



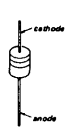
TC4S66F



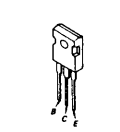
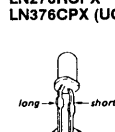
CL-170R-CD



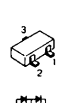
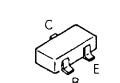
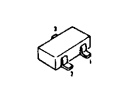
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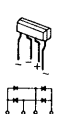
2SC4837-S

LN278RCPX
LN376CPX (UG)

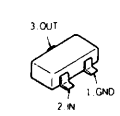
1SS226

DTA114TK
DTB123TK
DTC114TK
DTC144EK
2SA1162-G
2SB624-BV345
2SC1623-L5L6
2SC2715
2SC3659DCG010
DSE015
RD5.6M-B2
RD6.2M-B2
SB007-03CP
1SS193

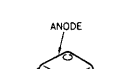
MA152WK



DTB123EK



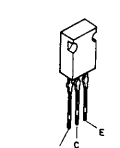
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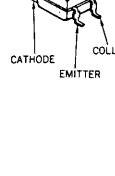
IT32



2SD2037-E



CL-51G-CD-501

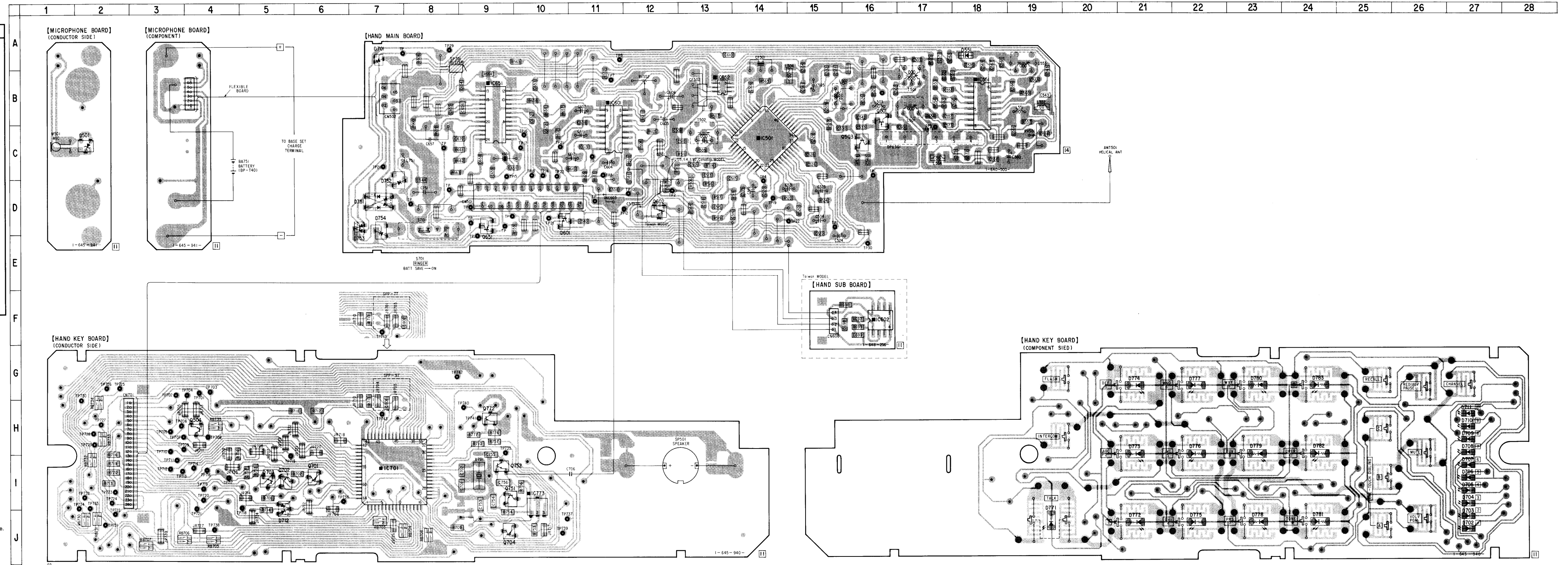
● SEMICONDUCTOR
LOCATION

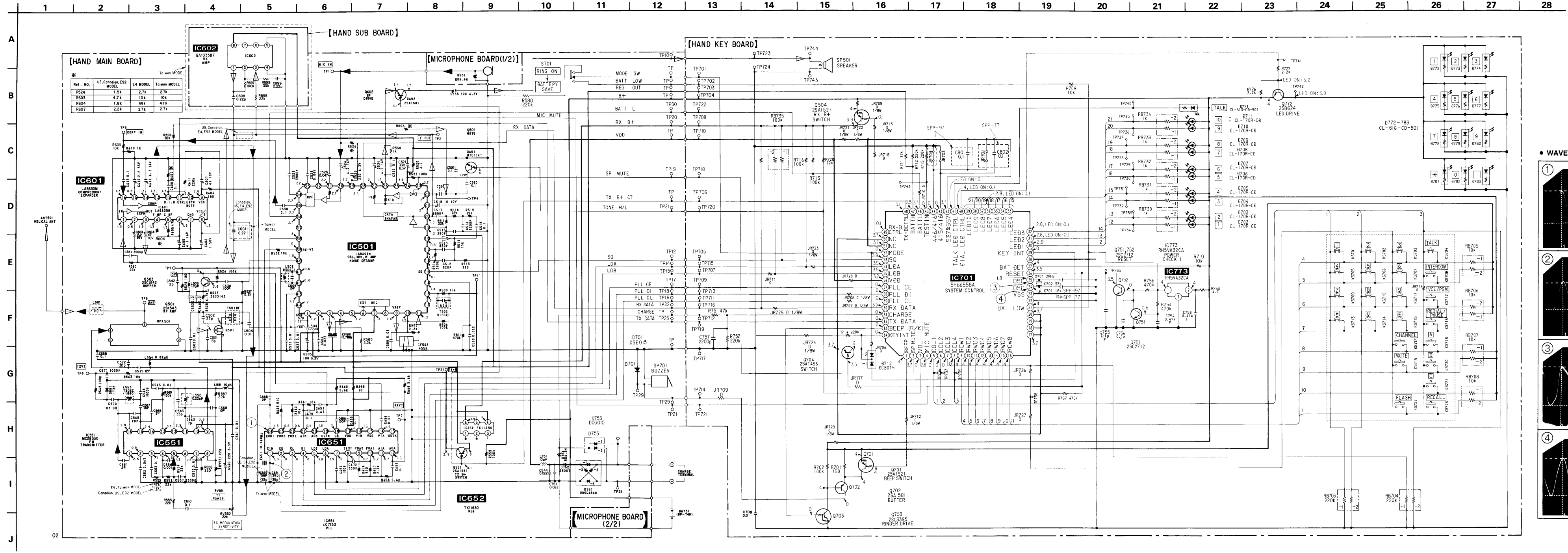
Ref. No.	Location	Ref. No.	Location
D501	C - 2	D783	G - 24
D551	A - 18		
D701	A - 7		
D702	J - 27	IC501	C - 14
D703	J - 27	IC551	B - 18
		IC601	B - 11
D704	I - 27	IC651	B - 9
D705	I - 27	IC652	B - 13
D706	I - 27		
D707	I - 27	IC701	I - 7
D708	H - 27	IC773	I - 10
		IC774	J - 8
D709	H - 27		
D710	H - 27	Q501	B - 16
D711	H - 27	Q503	C - 16
D712	I - 5	Q504	H - 4
D751	D - 7	Q551	D - 9
		Q601	D - 10
D752	D - 7		
D753	D - 7	Q602	D - 12
D754	D - 7	Q701	I - 6
D771	J - 19	Q702	I - 5
D772	J - 21	Q703	I - 5
		Q704	J - 9
D773	I - 21		
D774	G - 21	Q751	I - 9
D775	J - 22	Q752	I - 9
D776	I - 22	Q772	H - 9
D777	G - 22		
D778	J - 23		
D779	I - 23		
D780	G - 23		
D781	J - 24		
D782	I - 24		

Note:

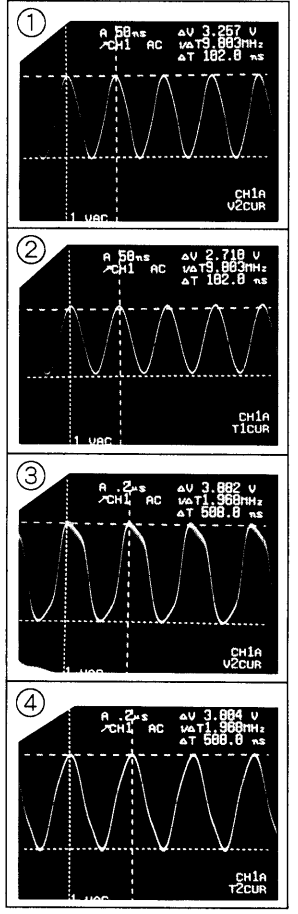
- : parts extracted from the component side.
- : parts mounted on the conductor side.
- : Through hole.
- : Pattern on the side which is seen.
- : Chip components extracted from the rear side.

7-1. PRINTED WIRING BOARDS (HANDSET SECTION)





• WAVEFORMS



- **SEMICONDUCTOR LOCATION**

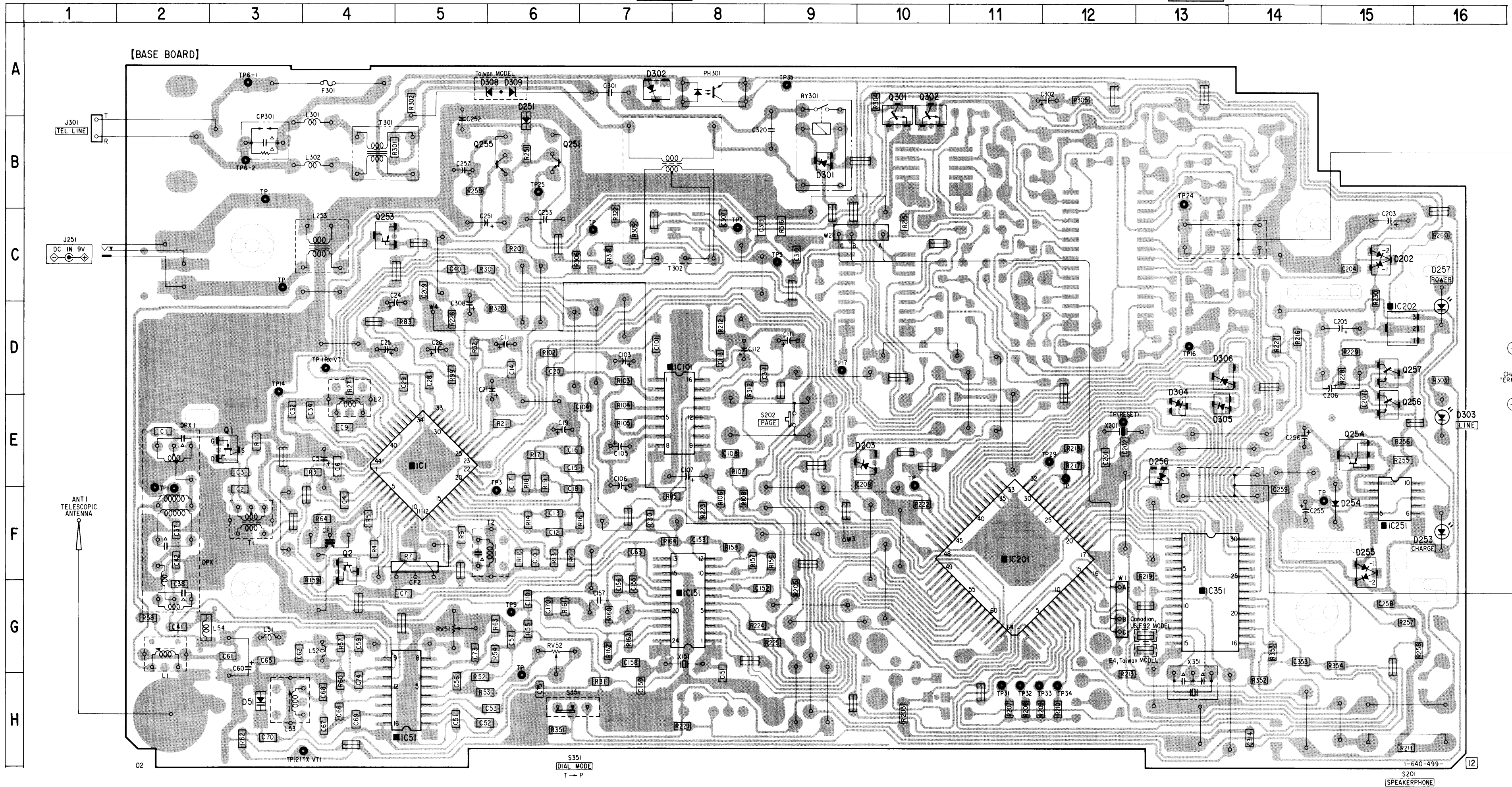
Ref. No.	Location
D51	H - 3
D202	C - 15
D203	E - 10
D251	B - 6
D253	F - 16
D254	F - 15
D255	F - 15
D256	E - 13
D257	C - 16
D301	B - 9
D302	A - 7
D303	E - 16
D304	E - 13
D305	E - 13
D306	D - 13
IC1	E - 5
IC51	H - 5
IC101	E - 8
IC151	G - 8
IC201	F - 11
IC202	D - 5
IC251	F - 15
IC351	G - 13
PH301	A - 8
Q1	E - 3
Q2	F - 4
Q251	B - 6
Q253	C - 4
Q254	E - 15
Q255	B - 6
Q256	D - 15
Q257	D - 15
Q301	A - 10
Q302	A - 10

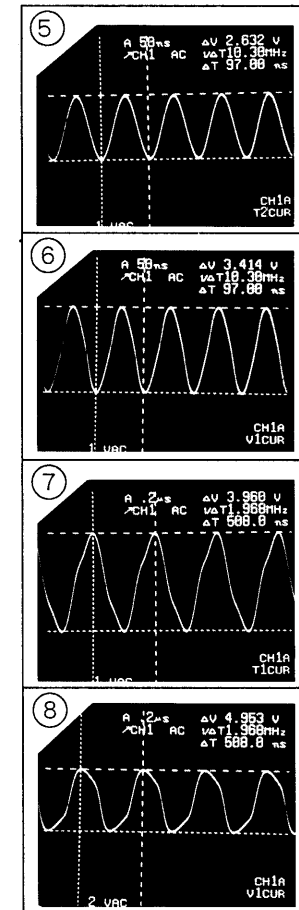
Note on Schematic Diagram :

- All capacitors are in μF unless otherwise noted. pF: μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}W$ or less unless otherwise specified.
 - Δ : internal component.
 -  : B+ Line
 -  : adjustment for repair.
- Handset section : Power voltage is dc 4V and fed with regulated dc power supply from battery terminal.
- Baseset section : Power voltage is dc 9V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
 - no mark : TALK
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Signal path.
 -  : RX
 -  : TX
- **Abbreviations**
 - E92 : Central and South America

Note on Printed Diagrams

- : parts extracted from the component side.
- : parts mounted on the conductor side.
- : Through hole.
- ▨ : Pattern on the side which is seen.
- : Chip components extracted from the rear side.





• SEMICONDUCTOR LOCATION

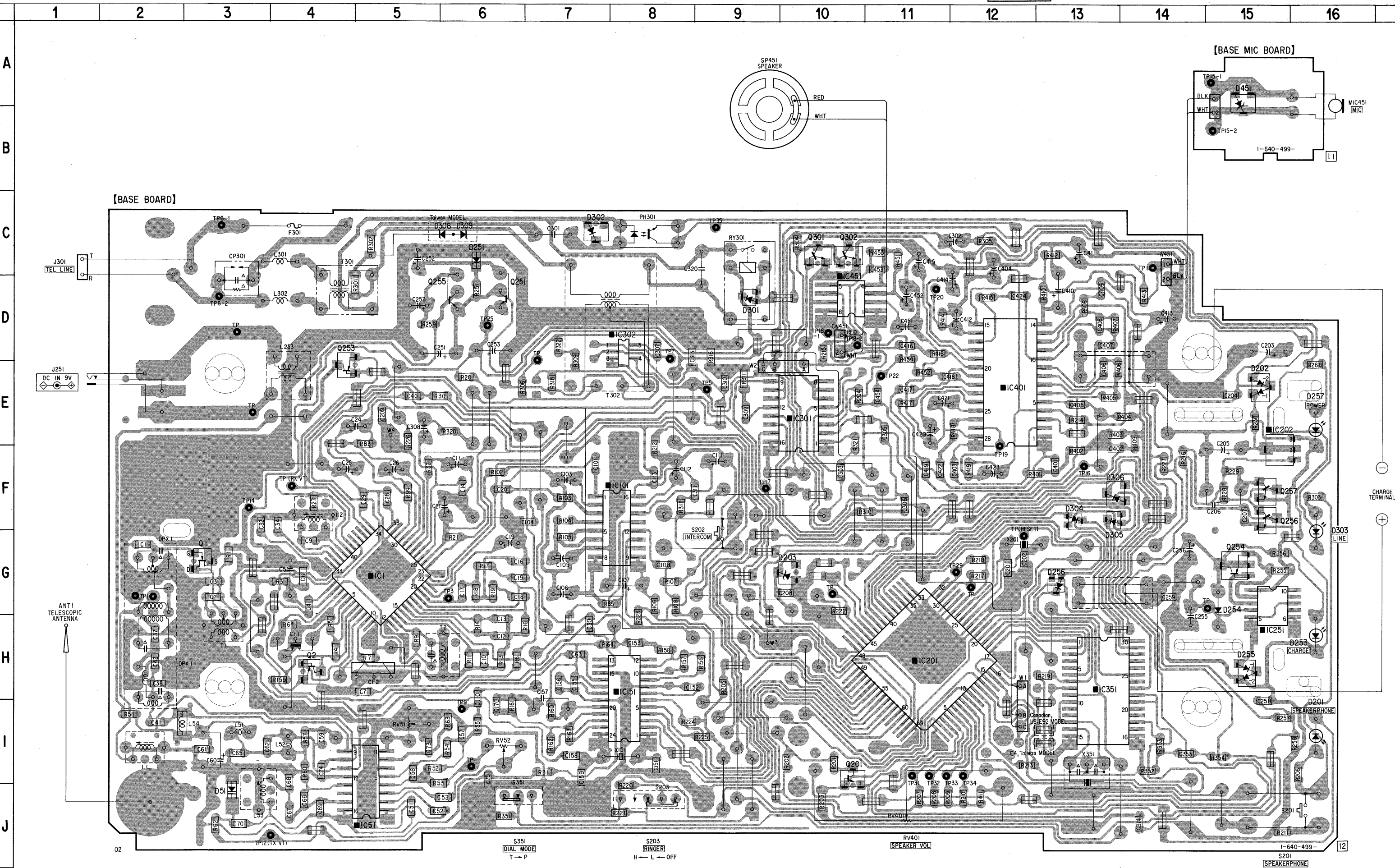
Ref. No.	Location
D51	J - 3
D201	I - 16
D202	E - 15
D203	G - 10
D251	C - 6
D253	H - 16
D254	G - 15
D255	H - 15
D256	G - 13
D257	E - 16
D301	D - 9
D302	C - 7
D303	G - 16
D304	F - 13
D305	F - 13
D306	F - 13
D451	A - 15
IC1	G - 5
IC51	J - 5
IC101	F - 8
IC151	H - 8
IC201	H - 11
IC202	F - 15
IC251	G - 15
IC301	E - 10
IC302	D - 8
IC351	H - 13
IC401	E - 12
IC451	D - 10
PH301	C - 8
Q1	G - 3
Q2	H - 4
Q201	I - 10
Q251	D - 6
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Q254	G - 15
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Q256	F - 15
Q257	F - 15
Q301	C - 10
Q302	C - 10

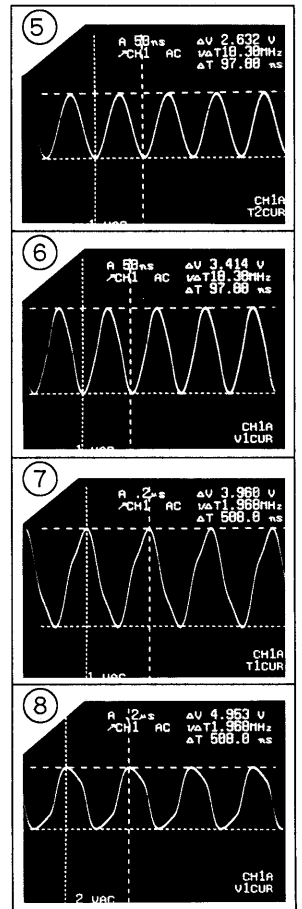
Note on Schematic Diagram :

- All capacitors are in μF unless otherwise noted. pF: μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}W$ or less unless otherwise specified.
- — : B+ Line
- — : adjustment for repair.
- Handset section : Power voltage is dc 4V and fed with regulated dc power supply from battery terminal.
- Base set section : Power voltage is dc 9V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- no mark : TALK
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Signal path.
- $\blacktriangle$: RX
- $\blacktriangleright$: TX
- Abbreviations
- E92 : Central and South America

Note on Printed Diagrams

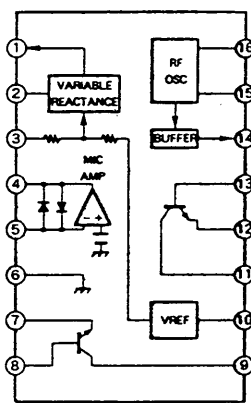
- $\bigcirc$ — : parts extracted from the component side.
- $\blacksquare$ — : parts mounted on the conductor side.
- $\bullet$: Through hole.
- $\square$: Pattern on the side which is seen.
- $\square$: Chip components extracted from the rear side.



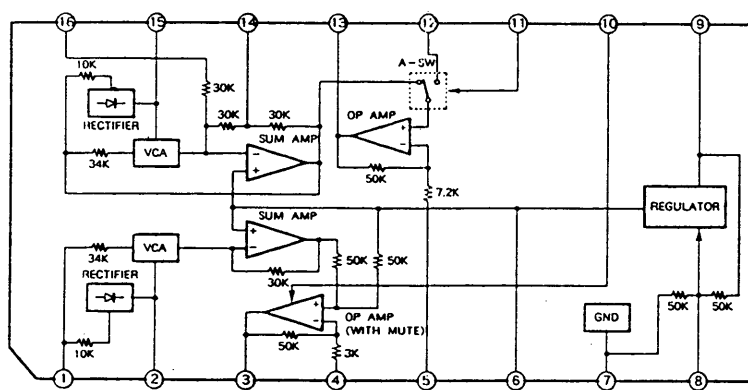


• IC BLOCK DIAGRAMS.

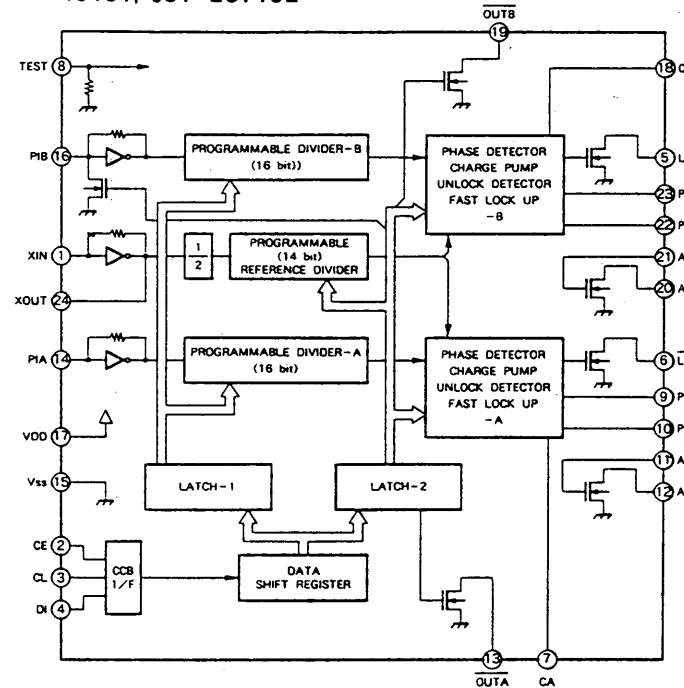
IC51, 551 MC2833D



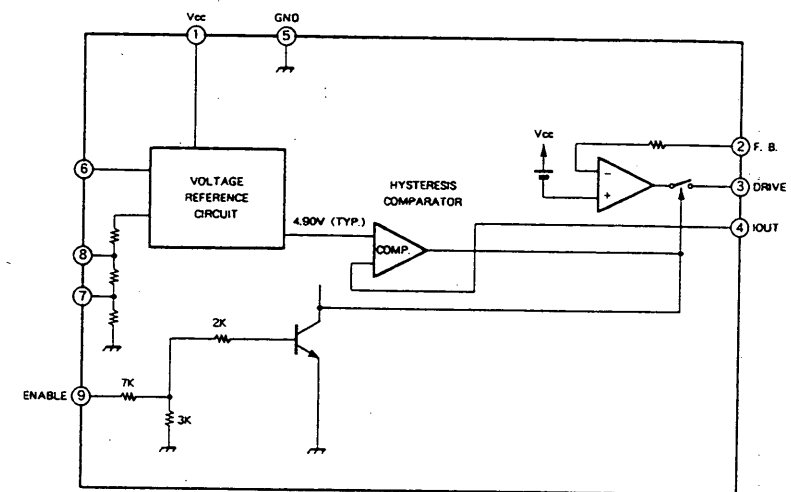
IC101, 601 LA8630M



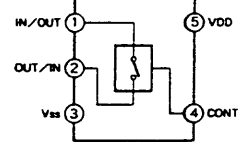
IC151, 651 LC7152



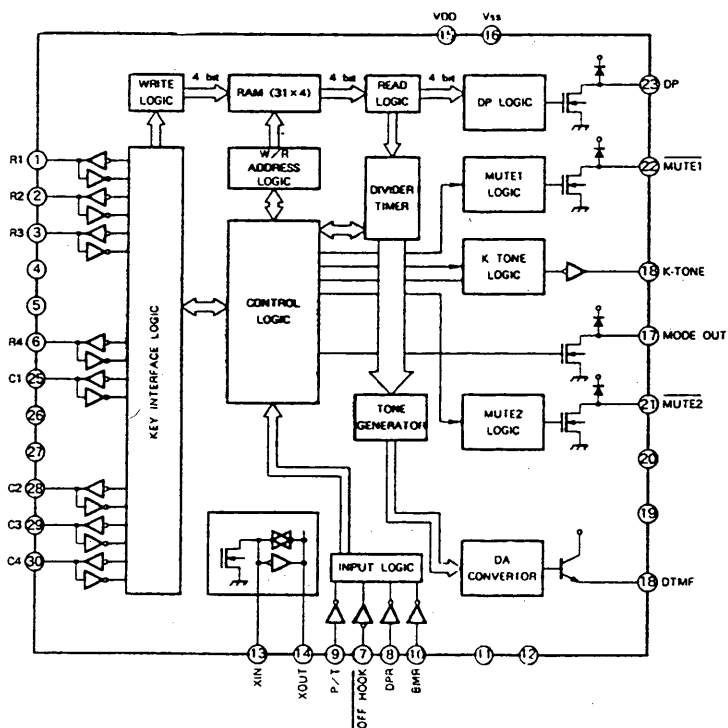
IC251 TA8523F



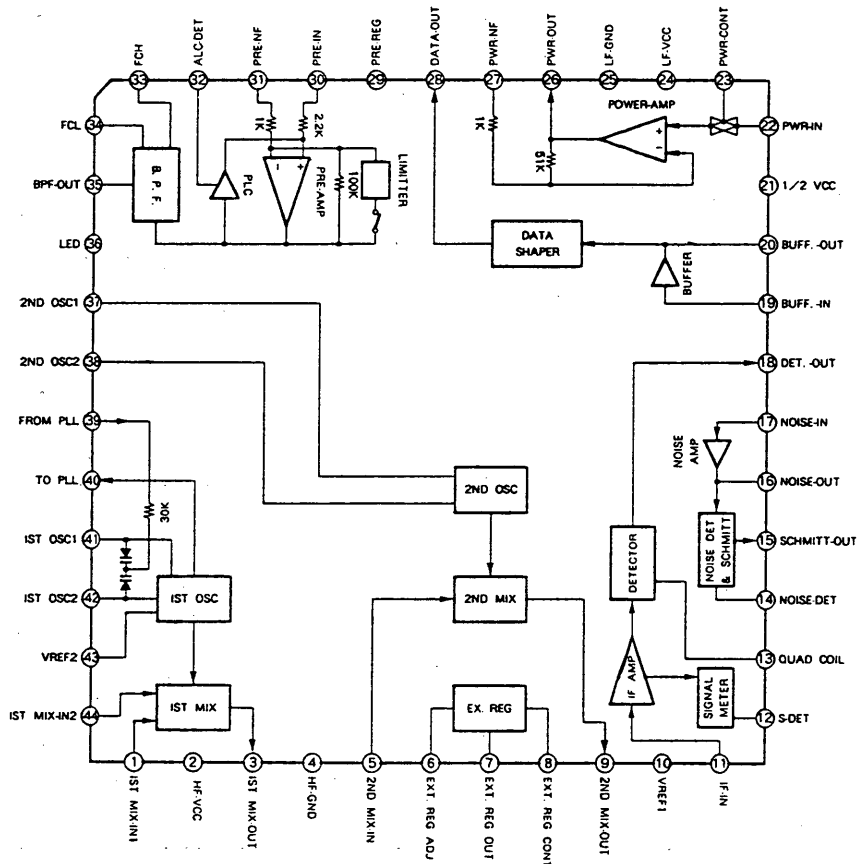
IC302 TC4S66



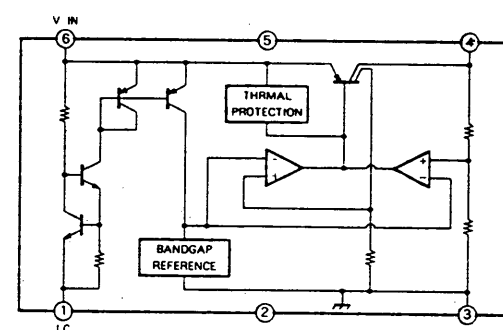
IC351 LC7367



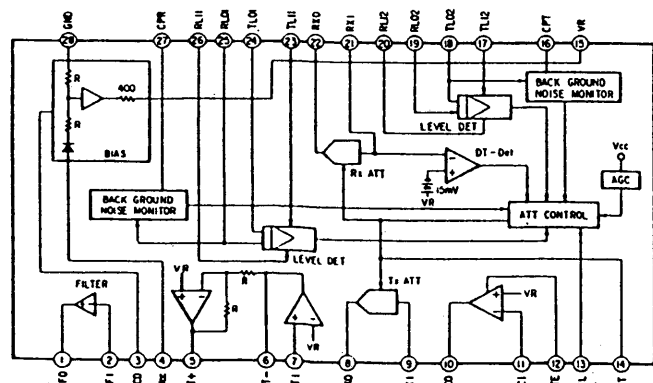
IC1, 501 LA8606M



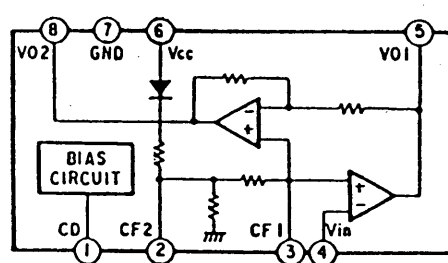
IC652 TK11630



IC401 MC34118D



IC451 MC34119D



SECTION 8 EXPLODED VIEWS

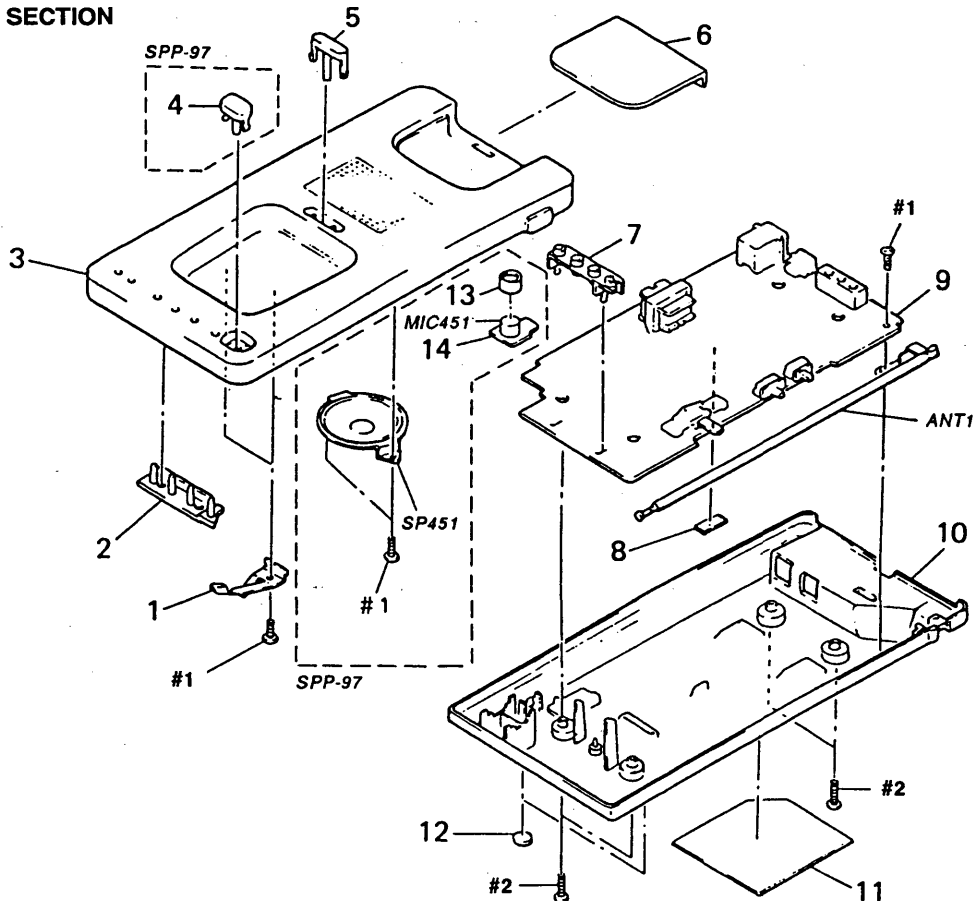
NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

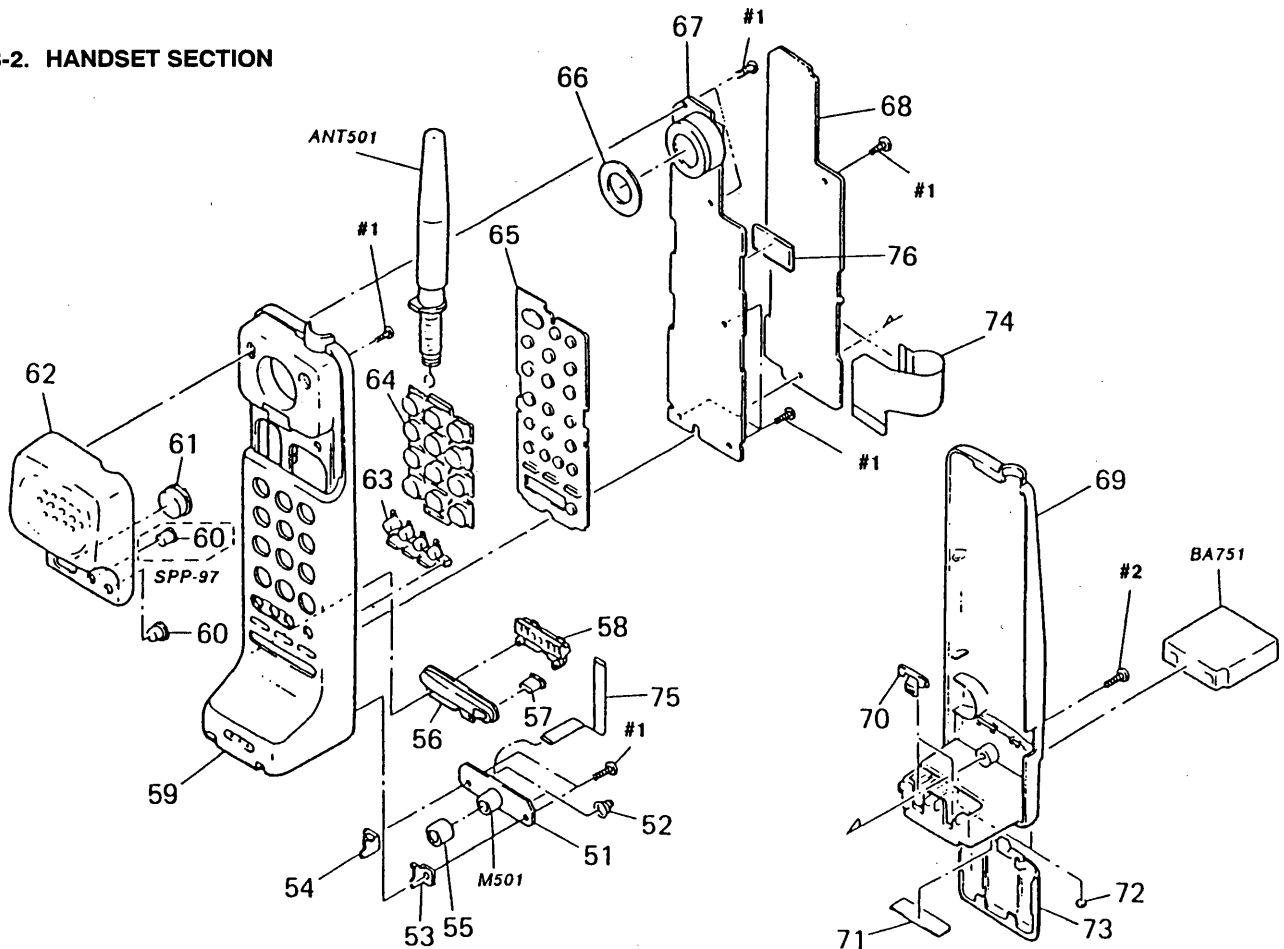
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- **Abbreviations**
CA : Canadian
E92 : Central and South America

8-1. BASESET SECTION



Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
1	3-370-990-01	TERMINAL, CHARGE		* 9	A-3668-087-A	BASE BOARD, COMPLETE (SPP-77:E4)	
2	3-370-986-01	PLATE, LIGHT GUIDE (SPP-97)		* 9	A-3668-289-A	BASE BOARD, COMPLETE (SPP-77:Taiwan)	
2	3-370-986-11	PLATE, LIGHT GUIDE (SPP-77)		* 9	A-3668-292-A	BASE BOARD, COMPLETE (SPP-97:Taiwan)	
3	3-370-983-21	CABINET (UPPER), BASE (SPP-97:EXCEPT CA)		10	3-370-984-33	CABINET (LOWER), BASE (SPP-97:EXCEPT CA)	
3	3-370-983-31	CABINET (UPPER), BASE (SPP-97:CA)		10	3-370-984-52	CABINET (LOWER), BASE (SPP-97:CA)	
3	3-372-781-21	CABINET (UPPER), BASE (SPP-77:EXCEPT CA)		10	3-370-996-51	CABINET (LOWER), BASE (SPP-77:CA)	
3	3-372-781-31	CABINET (UPPER), BASE (SPP-77:CA)		10	3-372-782-21	CABINET (LOWER), BASE (SPP-77:EXCEPT CA)	
4	3-370-989-21	BUTTON (SPEAKER PHONE) (SPP-97:EXCEPT CA)		* 11	3-384-730-01	LABEL, MODEL NUMBER, BASE (SPP-77:US)	
4	3-370-989-31	BUTTON (SPEAKER PHONE) (SPP-97:CA)		* 11	3-384-735-01	LABEL, MODEL NUMBER, BASE (SPP-97:US)	
5	3-370-988-21	BUTTON (INTERCOM/PAGE) (EXCEPT CA)		* 11	3-389-376-01	LABEL, MODEL NUMBER, BASE (SPP-97:E4, E92, Taiwan)	
5	3-371-010-31	BUTTON (INTERCOM/PAGE) (CA)					
6	3-370-985-21	LID, ORNAMENTAL (EXCEPT CA)		* 11	3-389-378-01	LABEL, MODEL NUMBER, BASE (SPP-77:E4, E92, Taiwan)	
6	3-370-985-31	LID, ORNAMENTAL (CA)		* 11	3-389-997-01	LABEL, MODEL NUMBER, BASE (SPP-97:CA)	
7	3-370-987-01	HOLDER (LED) (SPP-77:EXCEPT CA)		12	3-570-903-21	LEG	
7	3-370-999-01	HOLDER (LED) (SPP-77:CA)		13	3-370-977-01	CUSHION (MICROPHONE H) (SPP-97)	
8	9-911-837-XX	RETAINER, PC BOARD (SPP-97)					
* 9	A-3615-475-A	BASE BOARD, COMPLETE (SPP-97:CA)		* 14	1-641-355-11	BASE MICROPHONE BOARD (SPP-97)	
* 9	A-3668-000-A	BASE BOARD, COMPLETE (SPP-97:US, E92)		ANT1	1-501-511-11	ANTENNA, TELESCOPIC	
* 9	A-3668-070-A	BASE BOARD, COMPLETE (SPP-97:CA)		MIC451	1-542-168-11	MICROPHONE, ELECTRET CONDENSER (SPP-97)	
* 9	A-3668-071-A	BASE BOARD, COMPLETE (SPP-97:E4)		SP451	1-544-281-11	SPEAKER (SPP-97)	
* 9	A-3668-088-A	BASE BOARD, COMPLETE (SPP-77:US, E92)					

8-2. HANDSET SECTION



Ref. No.	Part No.	Description	Remark
* 51	1-645-941-12	MICROPHONE BOARD	
52	3-370-981-01	SPRING, BATTERY COIL	
53	3-370-980-01	TERMINAL (CHARGE R)	
54	3-370-979-01	TERMINAL (CHARGE L)	
55	3-370-977-01	CUSHION (MICROPHONE H)	
56	3-370-975-01	PLATE, TRANSPARENT	
57	3-370-974-01	BUTTON (CHANNEL)	
58	3-370-976-01	COVER (LED)	
59	3-370-966-21	CABINET (FRONT), HAND (EXCEPT CA)	
59	3-370-966-31	CABINET (FRONT), HAND (CA)	
60	3-370-973-21	BUTTON (INTERCAM H) (EXCEPT CA)	
60	3-370-973-41	BUTTON (INTERCAM H) (SPP-97:CA)	
60	3-371-045-41	BUTTON (INTERCAM H) (SPP-77:CA)	
61	3-384-613-01	BUTTON (TALK) (EXCEPT CA)	
61	3-384-613-11	BUTTON (TALK) (CA)	
62	3-370-968-31	PAD, EAR (SPP-97:EXCEPT CA)	
62	3-370-968-41	PAD, EAR (SPP-97:CA)	
62	3-372-779-21	PAD, EAR (SPP-77:EXCEPT CA)	
62	3-372-779-31	PAD, EAR (SPP-77:CA)	
63	3-370-971-02	BUTTON (7 GANG) (EXCEPT CA)	
63	3-370-971-21	BUTTON (7 GANG) (CA)	
64	3-384-612-01	BUTTON (12 KEY) (EXCEPT CA)	
64	3-384-612-11	BUTTON (12 KEY) (CA)	
65	1-692-321-11	SWITCH, RUBBER KEY	
66	3-372-738-01	GASKET (RECEIVER)	
* 67	A-3615-520-A	HAND KEY BOARD, COMPLETE (SPP-97:US, CA, E4, E92)	
* 67	A-3615-523-A	HAND KEY BOARD, COMPLETE (SPP-77:US, E4, E94)	
* 67	A-3615-559-A	HAND KEY BOARD, COMPLETE (SPP-97:Taiwan)	
* 67	A-3615-561-A	HAND KEY BOARD, COMPLETE (SPP-77:Taiwan)	

Ref. No.	Part No.	Description	Remark
* 67	A-3615-649-A	HAND KEY BOARD, COMPLETE (SPP-77:CA)	
* 68	A-3615-448-A	HAND MAIN BOARD, COMPLETE (SPP-97:US, E92, CA)	
* 68	A-3668-003-A	HAND MAIN BOARD, COMPLETE (SPP-77:CA)	
* 68	A-3668-084-A	HAND MAIN BOARD, COMPLETE (SPP-77:US, E92)	
* 68	A-3668-180-A	HAND MAIN BOARD, COMPLETE (SPP-97:E4)	
* 68	A-3668-181-A	HAND MAIN BOARD, COMPLETE (SPP-77:E4)	
* 68	A-3668-291-A	HAND MAIN BOARD, COMPLETE (SPP-77:Taiwan)	
* 68	A-3668-294-A	HAND MAIN BOARD, COMPLETE (SPP-97:Taiwan)	
69	3-370-967-51	CABINET (REAR), HAND (EXCEPT CA)	
69	3-370-967-71	CABINET (REAR), HAND (CA)	
70	3-370-978-01	TERMINAL BOARD, BATTERY	
* 71	3-384-731-01	LABEL, MODEL NUMBER, HAND (SPP-77:US)	
* 71	3-384-736-01	LABEL, MODEL NUMBER, HAND (SPP-97:US)	
* 71	3-389-377-01	LABEL, MODEL NUMBER, HAND (SPP-97:E4, E92, Taiwan)	
* 71	3-389-379-01	LABEL, MODEL NUMBER, HAND (SPP-77:E4, E92, Taiwan)	
* 71	3-389-998-01	LABEL, MODEL NUMBER, HAND (SPP-97:CA)	
72	3-370-982-01	FOOT (H), RUBBER	
73	3-370-969-21	LID, BATTERY CASE (EXCEPT CA)	
73	3-370-969-31	LID, BATTERY CASE (CA)	
74	1-646-473-11	PC BOARD, FLEXIBLE	
75	1-641-356-11	HAND FLEXIBLE BOARD	
* 76	1-648-256-11	HAND SUB BOARD (E)	
ANT501	1-501-510-11	ANTENNA, HELICAL (EXCEPT CA)	
ANT501	1-501-510-51	ANTENNA, HELICAL (CA)	
BA751	1-528-275-11	BATTERY (E4, E92)	
BA751	1-528-275-31	BATTERY (U, CA)	
M501	1-542-168-11	MICROPHONE, ELECTRET CONDENSER	

BASE

SECTION 9 ELECTRICAL PARTS LIST

NOTE :

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms
METAL : Metal-film resistor
METAL OXIDE : Metal oxide-film resistor
F : nonflammable

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

SEMICONDUCTORS

In each case, u : μ , for example :

uA..... : μ A....., uPA..... : μ PA.....

uPB..... : μ PB....., uPC..... : μ PC.....

uPD..... : μ PD.....

CAPACITORS

uF : μ F

COILS

uH : μ H

Abbreviations

CA : Canadian

E92 : Central and South America

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
*	A-3615-475-A	BASE BOARD, COMPLETE (SPP-97:CA) *****	
*	A-3668-000-A	BASE BOARD, COMPLETE (SPP-97:US, E92) *****	
*	A-3615-070-A	BASE BOARD, COMPLETE (SPP-77:CA) *****	
*	A-3668-071-A	BASE BOARD, COMPLETE (SPP-97:E4) *****	
*	A-3668-087-A	BASE BOARD, COMPLETE (SPP-77:E4) *****	
*	A-3668-088-A	BASE BOARD, COMPLETE (SPP-77:US, E92) *****	
*	A-3668-289-A	BASE BOARD, COMPLETE (SPP-77:Taiwan) *****	
*	A-3668-292-A	BASE BOARD, COMPLETE (SPP-97:Taiwan) *****	
	3-370-987-01	HOLDER (LED)	
	9-911-837-XX	RETAINER, PC BOARD (SPP-97)	

< CAPACITOR >

C1	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C2	1-163-234-11	CERAMIC CHIP	20PF	5%	50V
C3	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C4	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C5	1-124-584-00	ELECT	100uF	20%	10V
C6	1-163-063-00	CERAMIC CHIP	0.022uF		50V
C7	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C9	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C10	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C11	1-126-163-11	ELECT	4.7uF	20%	50V
C12	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C13	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C14	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C15	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C16	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C17	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C18	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C19	1-126-157-11	ELECT	10uF	20%	16V
C20	1-164-346-11	CERAMIC CHIP	1uF		16V
C21	1-124-589-11	ELECT	47uF	20%	16V

Ref. No.	Part No.	Description	Remark
C24	1-126-163-11	ELECT	4.7uF 20% 50V
C25	1-124-589-11	ELECT	47uF 20% 16V
C26	1-126-163-11	ELECT	4.7uF 20% 50V
C28	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V
C29	1-163-016-00	CERAMIC CHIP	0.0039uF 10% 50V
C30	1-163-235-11	CERAMIC CHIP	22PF 5% 50V
C32	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C34	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C37	1-163-097-00	CERAMIC CHIP	15PF 5% 50V
C38	1-163-104-00	CERAMIC CHIP	30PF 5% 50V
C40	1-163-141-00	CERAMIC CHIP	0.001uF 5% 50V
C41	1-163-097-00	CERAMIC CHIP	15PF 5% 50V
C42	1-163-229-11	CERAMIC CHIP	12PF 5% 50V
C51	1-163-085-00	CERAMIC CHIP	2PF 50V
C52	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V
C53	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V
C56	1-163-251-00	CERAMIC CHIP	100PF 5% 50V
C57	1-164-182-11	CERAMIC CHIP	0.0033uF 10% 50V
C59	1-163-234-11	CERAMIC CHIP	20PF 5% 50V
C60	1-124-589-11	ELECT	47uF 20% 16V
C61	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C62	1-163-243-11	CERAMIC CHIP	47PF 5% 50V
C63	1-163-239-11	CERAMIC CHIP	33PF 5% 50V
C65	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C66	1-163-085-00	CERAMIC CHIP	2PF 50V
C67	1-163-103-00	CERAMIC CHIP	27PF 5% 50V
C68	1-163-141-00	CERAMIC CHIP	0.001uF 5% 50V
C69	1-163-103-00	CERAMIC CHIP	27PF 5% 50V
C70	1-163-099-00	CERAMIC CHIP	18PF 5% 50V
C73	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C74	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C75	1-163-141-00	CERAMIC CHIP	0.001uF 5% 50V
C101	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V
C103	1-124-257-00	ELECT	2.2uF 20% 50V
C104	1-163-019-00	CERAMIC CHIP	0.0068MF 10% 50V(Taiwan)
C104	1-163-986-00	CERAMIC CHIP	0.027uF 10% 25V (US, E4, E92, CA)
C105	1-126-163-11	ELECT	4.7uF 20% 50V

Ref. No.	Part No.	Description	Remark		
C106	1-126-160-11	ELECT	1uF	20%	50V
C107	1-126-157-11	ELECT	10uF	20%	16V
C108	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V
C110	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V
C111	1-126-163-11	ELECT	4. 7uF	20%	50V
C112	1-124-257-00	ELECT	2. 2uF	20%	50V
C113	1-163-141-00	CERAMIC CHIP	0. 001uF	5%	50V
C151	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C152	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C153	1-164-005-11	CERAMIC CHIP	0. 47uF		25V
C155	1-163-809-11	CERAMIC CHIP	0. 047uF	10%	25V
C156	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C157	1-136-173-00	FILM	0. 47uF	5%	50V
C158	1-163-217-11	CERAMIC CHIP	1PF	0. 25PF	50V
C159	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C170	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V
C201	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C202	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C203	1-126-925-11	ELECT	470uF	20%	10V
C204	1-164-232-11	CERAMIC CHIP	0. 01uF		50V
C205	1-126-163-11	ELECT	4. 7uF	20%	50V
C206	1-124-465-00	ELECT	0. 47uF	20%	50V
C207	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V
C208	1-164-232-11	CERAMIC CHIP	0. 01uF		50V
C209	1-163-141-00	CERAMIC CHIP	0. 001uF	5%	50V
C251	1-126-934-11	ELECT	220uF	20%	16V
C252	1-126-933-11	ELECT	100uF	20%	16V
C253	1-126-176-11	ELECT	220uF	20%	10V
C255	1-126-160-11	ELECT	1uF	20%	50V
C256	1-126-160-11	ELECT	1uF	20%	50V
C257	1-126-933-11	ELECT	100uF	20%	16V
C258	1-162-587-11	CERAMIC CHIP	0. 039uF	10%	25V
C259	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V
C301	1-136-563-11	FILM	0. 9uF	10%	250V
C302	1-124-589-11	ELECT	47uF	20%	16V
C303	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V(SPP-97)
C305	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V(SPP-97)
C306	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V(SPP-97)
C307	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V (E4, Taiwan)
C307	1-164-346-11	CERAMIC CHIP	1uF	10%	25V (US, E92, CA)
C308	1-126-163-11	ELECT	4. 7uF	20%	50V
C309	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V(SPP-97)
C310	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V
C311	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V
C313	1-163-205-00	CERAMIC CHIP	0. 001uF	5%	50V
C314	1-163-037-11	CERAMIC CHIP	0. 022uF	10%	25V

Ref. No.	Part No.	Description	Remark		
C320	1-162-117-00	CERAMIC	100PF	10%	500V (Taiwan)
C320	1-162-318-11	CERAMIC	0. 001uF	10%	500V (US, E92, CA)
C353	1-163-037-11	CERAMIC CHIP	0. 022uF	10%	25V
C401	1-163-143-00	CERAMIC CHIP	0. 0012uF	5%	50V(SPP-97)
C402	1-163-037-11	CERAMIC CHIP	0. 022uF	10%	25V(SPP-97)
C403	1-163-135-00	CERAMIC CHIP	560PF	5%	50V(SPP-97)
C404	1-126-933-11	ELECT	100uF	20%	16V(SPP-97)
C405	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V(SPP-97)
C406	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V(SPP-97)
C407	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V(SPP-97)
C408	1-163-263-11	CERAMIC CHIP	330PF	5%	50V(SPP-97)
C409	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V(SPP-97)
C410	1-126-163-11	ELECT	4. 7uF	20%	50V(SPP-97)
C411	1-124-589-11	ELECT	47uF	20%	16V(SPP-97)
C412	1-124-589-11	ELECT	47uF	20%	16V(SPP-97)
C413	1-126-923-11	ELECT	220uF	20%	10V(SPP-97)
C414	1-124-257-00	ELECT	2. 2uF	20%	50V(SPP-97)
C415	1-124-257-00	ELECT	2. 2uF	20%	50V(SPP-97)
C416	1-163-809-11	CERAMIC CHIP	0. 047uF	10%	25V(SPP-97)
C417	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V(SPP-97)
C418	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V(SPP-97)
C419	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V(SPP-97)
C420	1-124-257-00	ELECT	2. 2uF	20%	50V(SPP-97)
C421	1-124-257-00	ELECT	2. 2uF	20%	50V(SPP-97)
C422	1-163-809-11	CERAMIC CHIP	0. 047uF	10%	25V(SPP-97)
C423	1-124-589-11	ELECT	47uF	20%	16V(SPP-97)
C424	1-163-809-11	CERAMIC CHIP	0. 047uF	10%	25V(SPP-97)
C451	1-126-163-11	ELECT	4. 7uF	20%	50V(SPP-97)
C452	1-126-160-11	ELECT	1uF	20%	50V(SPP-97)
C453	1-163-251-11	CERAMIC CHIP	100PF	5%	50V(SPP-97)
C454	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V(SPP-97)
< FILTER >					
CF1	1-567-097-61	FILTER, CERAMIC			
CF2	1-579-409-21	FILTER, CERAMIC			
< CONNECTOR >					
* CN451	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			(SPP-97)
< COMPOSITION CIRCUIT BLOCK >					
CP301	1-519-470-41	GAP, DISCHARGE (US, E92)			
CP301	1-519-686-21	GAP, DISCHARGE (E4, CA, Taiwan)			
< DIODE >					
D51	8-719-949-46	DIODE	1T32		

BASE

Ref. No.	Part No.	Description	Remark
D201	8-719-018-55	LED LN376CPX (UG) (SPEAKERPHONE) (SPP-97)	
D202	8-719-800-76	DIODE 1SS226	
D203	8-719-105-91	DIODE RD5. 6M-B2	
D251	8-719-105-91	DIODE RD5. 6M-B2	
D253	8-719-018-53	LED LN276RCPX (CHARGE)	
D254	8-719-984-80	DIODE 1SR139-200	
D255	8-719-800-76	DIODE 1SS226	
D256	8-719-023-75	DIODE DCG010	
D257	8-719-018-55	LED LN376CPX (UG) (POWER)	
D301	8-719-023-75	DIODE DCG010	
D302	8-719-801-48	DIODE 1SS193	
D303	8-719-018-55	LED LN376CPX (UG) (LINE)	
D304	8-719-023-75	DIODE DCG010	
D305	8-719-023-75	DIODE DCG010	
D306	8-719-801-48	DIODE 1SS193	
D308	8-719-101-76	DIODE RD10E-L2 (Taiwan)	
D309	8-719-101-76	DIODE RD10E-L2 (Taiwan)	
< FILTER >			
DPX1	1-239-126-21	FILTER, BAND PASS	
< FUSE >			
F301	1-532-773-21	FUSE, MICRO (SECONDARY) (E4, CA, Taiwan)	
F301	1-532-869-11	FUSE, GLASS TUBE (0. 5A) (US, E92)	
< IC >			
IC1	8-759-824-17	IC LA8606M	
IC51	8-759-039-21	IC MC2833D	
IC101	8-759-824-18	IC LA8630M	
IC151	8-759-824-20	IC LC7152M	
IC201	8-759-067-40	IC SB66506B-4855	
IC202	8-759-941-78	IC S-8053ALB	
IC251	8-759-246-64	IC TA8523F	
IC301	8-759-300-71	IC HD14053BFP (SPP-97)	
IC302	8-759-234-77	IC TC4S66F (SPP-97)	
IC351	8-759-823-96	IC LC7367JM	
IC401	8-759-030-78	IC MC34118DW (SPP-97)	
IC451	8-759-030-76	IC MC34119-ML (SPP-97)	
< JACK >			
J251	1-568-727-31	JACK, DC (DC IN 9V)	
J301	1-566-865-21	JACK, MODULAR (6P-2C) (TEL LINE)	
< JUMPER RESISTOR >			
JR1	1-216-295-00	METAL CHIP 0 5% 1/10W (SPP-97)	
JR2	1-216-295-00	METAL CHIP 0 5% 1/10W (SPP-77)	
JR3	1-216-295-00	METAL CHIP 0 5% 1/10W	

Ref. No.	Part No.	Description	Remark
JR5	1-216-295-00	METAL CHIP 0 5% 1/10W (SPP-77)	
JR6	1-216-295-00	METAL CHIP 0 5% 1/10W (SPP-77)	
JR53	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR54	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR101	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR102	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR103	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR104	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR105	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR107	1-216-296-00	METAL CHIP 0 5% 1/8W (SPP-97)	
JR108	1-216-296-00	METAL CHIP 0 5% 1/8W (SPP-97)	
JR109	1-216-296-00	METAL CHIP 0 5% 1/8W (SPP-97)	
JR110	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR111	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR112	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR113	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR115	1-216-296-00	METAL CHIP 0 5% 1/8W (SPP-97)	
JR116	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR117	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR118	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR119	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR120	1-216-296-00	METAL CHIP 0 5% 1/8W (SPP-97)	
JR121	1-216-296-00	METAL CHIP 0 5% 1/8W (SPP-97)	
JR122	1-216-296-00	METAL CHIP 0 5% 1/8W (SPP-97)	
JR123	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR124	1-216-296-00	METAL CHIP 0 5% 1/8W (SPP-97)	
JR125	1-216-296-00	METAL CHIP 0 5% 1/8W (SPP-97)	
JR126	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR127	1-216-296-00	METAL CHIP 0 5% 1/8W (SPP-97)	
JR128	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR129	1-216-296-00	METAL CHIP 0 5% 1/8W (SPP-97)	
JR130	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR201	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR202	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR208	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR210	1-216-295-00	METAL CHIP 0 5% 1/10W (SPP-97)	
JR211	1-216-295-00	METAL CHIP 0 5% 1/10W (SPP-97)	
JR212	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR213	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR214	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR215	1-216-295-00	METAL CHIP 0 5% 1/10W (SPP-97)	
JR216	1-216-295-00	METAL CHIP 0 5% 1/10W (SPP-97)	
JR218	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR219	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR220	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR221	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR222	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR223	1-216-295-00	METAL CHIP 0 5% 1/10W (SPP-97)	
JR224	1-216-295-00	METAL CHIP 0 5% 1/10W	

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
JR226	1-216-295-00	METAL CHIP	0	5%	1/10W (E4)	R17	1-216-081-00	METAL CHIP	22K	5%	1/10W
JR230	1-216-295-00	METAL CHIP	0	5%	1/10W	R18	1-216-081-00	METAL CHIP	22K	5%	1/10W
JR250	1-216-295-00	METAL CHIP	0	5%	1/10W (SPP-97)	R19	1-216-081-00	METAL CHIP	22K	5%	1/10W
JR351	1-216-295-00	METAL CHIP	0	5%	1/10W	R20	1-216-001-00	METAL CHIP	10	5%	1/10W
JR352	1-216-295-00	METAL CHIP	0	5%	1/10W	R21	1-216-097-00	METAL CHIP	100K	5%	1/10W
JR354	1-216-295-00	METAL CHIP	0	5%	1/10W (E4, Taiwan)	R27	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
JR570	1-216-295-00	METAL CHIP	0	5%	1/10W	R30	1-216-073-00	METAL CHIP	10K	5%	1/10W
JR571	1-216-295-00	METAL CHIP	0	5%	1/10W (SPP-97)	R31	1-216-073-00	METAL CHIP	10K	5%	1/10W
< COIL >						R32	1-216-042-00	METAL CHIP	510	5%	1/10W (E4, Taiwan)
L1	1-402-571-21	COIL (ANT)				R32	1-216-055-00	METAL CHIP	1.8K	5%	1/10W (US, E92, CA)
L2	1-406-432-21	COIL (OSC)				R52	1-216-081-00	METAL CHIP	22K	5%	1/10W (E4, Taiwan)
L51	1-408-970-21	INDUCTOR 10uH				R52	1-216-091-00	METAL CHIP	56K	5%	1/10W (US, E92, CA)
L52	1-410-809-21	INDUCTOR 1.2uH				R53	1-216-099-00	METAL CHIP	120K	5%	1/10W
L53	1-406-433-21	COIL (OSC)				R54	1-216-081-00	METAL CHIP	22K	5%	1/10W
L54	1-410-740-21	INDUCTOR CHIP 0.82uH				R55	1-216-081-00	METAL CHIP	22K	5%	1/10W
L253	1-424-618-11	FILTER, NOISE				R57	1-216-077-00	METAL CHIP	15K	5%	1/10W
L301	1-408-409-00	INDUCTOR 10uH				R58	1-216-001-00	METAL CHIP	10	5%	1/10W
L302	1-408-409-00	INDUCTOR 10uH				R60	1-216-093-00	METAL CHIP	68K	5%	1/10W
< PHOTO INTERRUPTER >						R62	1-216-097-00	METAL CHIP	100K	5%	1/10W
PH301	8-719-156-73	DIODE PS2501-1LA				R63	1-216-037-00	METAL CHIP	330	5%	1/10W
< TRANSISTOR >						R64	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
Q1	8-729-809-61	TRANSISTOR 2SK543-CJ4				R83	1-216-097-00	METAL CHIP	100K	5%	1/10W
Q2	8-729-216-22	TRANSISTOR 2SA1162-G				R85	1-216-105-00	METAL CHIP	220K	5%	1/10W
Q201	8-729-805-42	TRANSISTOR 2SC3859 (SPP-97)				R102	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
Q251	8-729-011-39	TRANSISTOR 2SC4837-S				R103	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
Q253	8-729-904-51	TRANSISTOR DTB123EK				R104	1-216-071-00	METAL CHIP	8.2K	5%	1/10W (Taiwan)
Q254	8-729-804-41	TRANSISTOR 2SB1122				R104	1-216-081-00	METAL CHIP	22K	5%	1/10W (US, E92, CA)
Q255	8-729-011-39	TRANSISTOR 2SC4837-S				R104	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (E4)
Q256	8-729-120-28	TRANSISTOR 2SC1623-L5L6				R105	1-216-061-00	METAL CHIP	3.3K	5%	1/10W (Taiwan)
Q257	8-729-120-28	TRANSISTOR 2SC1623-L5L6				R105	1-216-086-00	METAL CHIP	36K	5%	1/10W (US, E4, E92, CA)
Q301	8-729-805-42	TRANSISTOR 2SC3859				R106	1-216-029-00	METAL CHIP	150	5%	1/10W
Q302	8-729-120-28	TRANSISTOR 2SC1623-L5L6				R107	1-216-065-00	METAL CHIP	6.8K	5%	1/10W (US, E92, CA)
< RESISTOR >						R107	1-216-076-00	METAL CHIP	13K	5%	1/10W (E4, Taiwan)
R1	1-216-017-00	METAL CHIP	47	5%	1/10W	R108	1-216-097-00	METAL CHIP	100K	5%	1/10W
R3	1-216-017-00	METAL CHIP	47	5%	1/10W	R156	1-216-042-00	METAL CHIP	510	5%	1/10W
R4	1-216-073-00	METAL CHIP	10K	5%	1/10W	R157	1-216-073-00	METAL CHIP	10K	5%	1/10W
R5	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	R158	1-216-073-00	METAL CHIP	10K	5%	1/10W
R6	1-216-105-00	METAL CHIP	220K	5%	1/10W	R159	1-216-001-00	METAL CHIP	10	5%	1/10W
R7	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	R160	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R9	1-216-079-00	METAL CHIP	18K	5%	1/10W	R161	1-216-073-00	METAL CHIP	10K	5%	1/10W
R11	1-216-097-00	METAL CHIP	100K	5%	1/10W	R162	1-216-073-00	METAL CHIP	10K	5%	1/10W
R13	1-216-047-00	METAL CHIP	820	5%	1/10W						
R14	1-216-111-00	METAL CHIP	390K	5%	1/10W						
R16	1-216-077-00	METAL CHIP	15K	5%	1/10W						

BASE

Ref. No.	Part No.	Description	Remark
R163	1-216-042-00	METAL CHIP	510 5% 1/10W
R164	1-216-067-00	METAL CHIP	5.6K 5% 1/10W
R201	1-216-065-00	METAL CHIP	4.7K 5% 1/10W(SPP-97)
R202	1-216-091-00	METAL CHIP	56K 5% 1/10W(SPP-97)
R203	1-216-246-00	METAL GLAZE	100K 5% 1/8W
R204	1-216-097-00	METAL CHIP	100K 5% 1/10W(SPP-97)
R205	1-216-105-00	METAL CHIP	220K 5% 1/10W
R206	1-216-033-00	METAL CHIP	220 5% 1/10W(SPP-97)
R207	1-216-105-00	METAL CHIP	220K 5% 1/10W
R208	1-216-105-00	METAL CHIP	220K 5% 1/10W
R209	1-216-105-00	METAL CHIP	220K 5% 1/10W
R210	1-216-105-00	METAL CHIP	220K 5% 1/10W
R211	1-216-105-00	METAL CHIP	220K 5% 1/10W
R212	1-216-105-00	METAL CHIP	220K 5% 1/10W
R213	1-216-105-00	METAL CHIP	220K 5% 1/10W
R214	1-216-073-00	METAL CHIP	10K 5% 1/10W(SPP-97)
R215	1-216-073-00	METAL CHIP	10K 5% 1/10W
R216	1-216-105-00	METAL CHIP	220K 5% 1/10W
R217	1-216-105-00	METAL CHIP	220K 5% 1/10W
R218	1-216-105-00	METAL CHIP	220K 5% 1/10W
R219	1-216-073-00	METAL CHIP	10K 5% 1/10W
R220	1-216-097-00	METAL CHIP	100K 5% 1/10W(SPP-97)
R221	1-216-097-00	METAL CHIP	100K 5% 1/10W
R222	1-216-105-00	METAL CHIP	220K 5% 1/10W
R223	1-216-097-00	METAL CHIP	100K 5% 1/10W
R224	1-216-097-00	METAL CHIP	100K 5% 1/10W
R225	1-216-097-00	METAL CHIP	100K 5% 1/10W
R226	1-216-073-00	METAL CHIP	10K 5% 1/10W
R227	1-216-097-00	METAL CHIP	100K 5% 1/10W
R228	1-216-097-00	METAL CHIP	100K 5% 1/10W
R229	1-216-113-00	METAL CHIP	470K 5% 1/10W
R230	1-216-308-00	METAL CHIP	4.7 5% 1/10W
R251	1-216-043-00	METAL CHIP	560 5% 1/10W
R255	1-216-148-00	METAL GLAZE	8.2 5% 1/8W
R256	1-216-041-00	METAL CHIP	470 5% 1/10W
R257	1-216-081-00	METAL CHIP	22K 5% 1/10W
R258	1-216-089-00	METAL CHIP	47K 5% 1/10W
R259	1-216-033-00	METAL CHIP	220 5% 1/10W
R260	1-216-043-00	METAL CHIP	560 5% 1/10W
R301	1-216-226-00	METAL GLAZE	15K 5% 1/8W
R302	1-216-224-00	METAL GLAZE	12K 5% 1/8W
R303	1-216-033-00	METAL CHIP	220 5% 1/10W
R304	1-216-067-00	METAL CHIP	5.6K 5% 1/10W
R305	1-216-065-00	METAL CHIP	4.7K 5% 1/10W
R306	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R309	1-216-052-00	METAL CHIP	1.3K 5% 1/10W
R310	1-216-081-00	METAL CHIP	22K 5% 1/10W(SPP-97)
R311	1-216-250-00	METAL GLAZE	150K 5% 1/8W (SPP-97)
R312	1-216-105-00	METAL CHIP	220K 5% 1/10W

Ref. No.	Part No.	Description	Remark
R316	1-216-222-00	METAL GLAZE	10K 5% 1/8W
R318	1-216-033-00	METAL CHIP	220 5% 1/10W
R320	1-216-029-00	METAL CHIP	150 5% 1/10W
R321	1-216-097-00	METAL CHIP	100K 5% 1/10W(SPP-97)
R322	1-216-025-00	METAL CHIP	100 5% 1/10W
R351	1-216-073-00	METAL CHIP	10K 5% 1/10W
R352	1-216-061-00	METAL CHIP	3.3K 5% 1/10W(Taiwan)
R352	1-216-065-00	METAL CHIP	4.7K 5% 1/10W(E4)
R352	1-216-079-00	METAL CHIP	18K 5% 1/10W (US, E92, CA)
R353	1-216-073-00	METAL CHIP	10K 5% 1/10W
R354	1-216-065-00	METAL CHIP	4.7K 5% 1/10W
R401	1-216-089-00	METAL CHIP	47K 5% 1/10W(SPP-97)
R402	1-216-089-00	METAL CHIP	47K 5% 1/10W(SPP-97)
R403	1-216-089-00	METAL CHIP	47K 5% 1/10W(SPP-97)
R404	1-216-097-00	METAL CHIP	100K 5% 1/10W(SPP-97)
R405	1-216-091-00	METAL CHIP	56K 5% 1/10W(SPP-97)
R406	1-216-073-00	METAL CHIP	10K 5% 1/10W(SPP-97)
R407	1-216-101-00	METAL CHIP	150K 5% 1/10W(SPP-97)
R408	1-216-073-00	METAL CHIP	10K 5% 1/10W(SPP-97)
R409	1-216-097-00	METAL CHIP	100K 5% 1/10W(SPP-97)
R410	1-216-099-00	METAL CHIP	120K 5% 1/10W(SPP-97)
R411	1-216-073-00	METAL CHIP	10K 5% 1/10W(SPP-97)
R412	1-216-053-00	METAL CHIP	1.5K 5% 1/10W(SPP-97)
R413	1-216-049-00	METAL CHIP	1K 5% 1/10W(SPP-97)
R414	1-216-097-00	METAL CHIP	100K 5% 1/10W(SPP-97)
R415	1-216-073-00	METAL CHIP	10K 5% 1/10W(SPP-97)
R416	1-216-067-00	METAL CHIP	5.6K 5% 1/10W(SPP-97)
R417	1-216-067-00	METAL CHIP	5.6K 5% 1/10W(SPP-97)
R418	1-216-073-00	METAL CHIP	10K 5% 1/10W(SPP-97)
R419	1-216-097-00	METAL CHIP	100K 5% 1/10W(SPP-97)
R451	1-216-097-00	METAL CHIP	100K 5% 1/10W(SPP-97)
R452	1-216-086-00	METAL GLAZE	36K 5% 1/10W(SPP-97)
R453	1-216-107-00	METAL CHIP	270K 5% 1/10W(SPP-97)
R454	1-216-097-00	METAL CHIP	100K 5% 1/10W(SPP-97)
< VARIABLE RESISTOR >			
RV51	1-241-765-11	RES, ADJ, CARBON 22K(TX POWER)	
RV52	1-241-768-11	RES, ADJ, CARBON 220K (TX MODULATION SENSITIVITY)	
RV401	1-241-326-11	RES, VAR, SLIDE 20K(SPEAKER VOL) (SPP-97)	
< RELAY >			
RY301	1-515-773-11	RELAY	
< SWITCH >			
S201	1-572-829-21	SWITCH, KEYBOARD(SPEAKERPHONE) (SPP-97)	
S202	1-572-829-21	SWITCH, KEYBOARD (PAGE) (SPP-77)	
S202	1-572-829-21	SWITCH, KEYBOARD(INTERCOM) (SPP-97)	

BASE

BASE MICROPHONE

HAND KEY

Ref.No.	Part No.	Description	Remark
S203	1-572-834-21	SWITCH, SLIDE (RINGER) (SPP-97)	
S351	1-572-835-21	SWITCH, SLIDE (DIAL MODE)	
< TRANSFORMER >			
T1	1-402-173-21	COIL	
T2	1-404-756-11	COIL, IF TRANSFORMER	
T301	1-424-024-11	FILTER, NOISE	
T302	1-424-539-11	TRANSFORMER, LINE	
< CRYSTAL >			
X151	1-567-773-11	VIBRATOR, CRYSTAL (10.24MHz)	
X201	1-577-260-21	VIBRATOR, CERAMIC (2MHz)	
X351	1-578-773-11	VIBRATOR, CERAMIC (3.58MHz)	

*	1-641-355-11	BASE MICROPHONE BOARD (SPP-97)	

	3-370-977-01	CUSHION (MICROPHONE H) (SPP-97)	
< DIODE >			
D451	8-719-106-08	DIODE RD6.2M-B2(SPP-97)	
< MIC >			
MIC451	1-542-168-11	MICROPHONE, ELECTRET CONDENSER (SPP-97)	

*	A-3615-520-A	HAND KEY BOARD, COMPLETE	

		(SPP-97:US, CA, E4, E92)	
*	A-3615-523-A	HAND KEY BOARD, COMPLETE	

		(SPP-77:US, E4, E92)	
*	A-3615-559-A	HAND KEY BOARD COMPLETE (SPP-97:Taiwan)	

*	A-3615-561-A	HAND KEY BOARD COMPLETE (SPP-77:Taiwan)	

*	A-3615-649-A	HAND KEY BOARD COMPLETE (SPP-77:CA)	

< CAPACITOR >			
C701	1-163-097-00	CERAMIC CHIP 15PF	5% 50V(SPP-77)
C701	1-163-099-00	CERAMIC CHIP 18PF	5% 50V(SPP-97)
C702	1-163-239-11	CERAMIC CHIP 33PF	5% 50V
C706	1-101-104-00	CERAMIC CHIP 0.01MF	50V
C753	1-162-637-11	CERAMIC CHIP 0.47uF	16V
C754	1-162-637-11	CERAMIC CHIP 0.47uF	16V
C755	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C756	1-163-077-00	CERAMIC CHIP 0.1uF	10% 25V
C757	1-164-161-11	CERAMIC CHIP 0.0022uF	10% 100V
C801	1-163-038-00	CERAMIC CHIP 0.1uF	25V(SPP-97)

Ref.No.	Part No.	Description	Remark
C802	1-163-038-00	CERAMIC CHIP 0.1uF	25V(SPP-77)
< CONNECTOR >			
CN701	1-573-790-21	SOCKET, CONNECTOR 24P	
< DIODE >			
D702	8-719-018-51	LED CL-170R-CD (1)	
D703	8-719-018-51	LED CL-170R-CD (2)	
D704	8-719-018-51	LED CL-170R-CD (3)	
D705	8-719-018-51	LED CL-170R-CD (4)	
D706	8-719-018-51	LED CL-170R-CD (5)	
D707	8-719-018-51	LED CL-170R-CD (6)	
D708	8-719-018-51	LED CL-170R-CD (7)	
D709	8-719-018-51	LED CL-170R-CD (8)	
D710	8-719-018-51	LED CL-170R-CD (9)	
D711	8-719-018-51	LED CL-170R-CD (10)	
D712	8-719-400-18	DIODE MA152WK	
D771	8-719-971-60	LED CL-61G-CD-501 (TALK)	
D772	8-719-971-60	LED CL-61G-CD-501 (1)	
D773	8-719-971-60	LED CL-61G-CD-501 (ABC/2)	
D774	8-719-971-60	LED CL-61G-CD-501 (DEF/3)	
D775	8-719-971-60	LED CL-61G-CD-501 (GHI/4)	
D776	8-719-971-60	LED CL-61G-CD-501 (JLK/5)	
D777	8-719-971-60	LED CL-61G-CD-501 (MNO/6)	
D778	8-719-971-60	LED CL-61G-CD-501 (PRS/7)	
D779	8-719-971-60	LED CL-61G-CD-501 (TUV/8)	
D780	8-719-971-60	LED CL-61G-CD-501 (WXY/9)	
D781	8-719-971-60	LED CL-61G-CD-501 (TONE/*)	
D782	8-719-971-60	LED CL-61G-CD-501 (OPER/0)	
D783	8-719-971-60	LED CL-61G-CD-501 (#)	
< IC >			
IC701	8-759-099-46	IC SH66558A-4A75	
IC773	8-759-506-87	IC RH5VA32CA-T1	
< JUMPER RESISTOR >			
JR701	1-216-295-00	METAL CHIP 0 5% 1/10W (SPP-77)	
JR703	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR704	1-216-295-00	METAL CHIP 0 5% 1/10W (SPP-97)	
JR705	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR706	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR707	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR708	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR709	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR710	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR711	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR712	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR713	1-216-296-00	METAL CHIP 0 5% 1/8W	

HAND KEY

HAND MAIN

Ref. No.	Part No.	Description	Remark
JR714	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR717	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR718	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR720	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR721	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR722	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR723	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR724	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR725	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR726	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR727	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR729	1-216-296-00	METAL CHIP 0 5% 1/8W	
< TRANSISTOR >			
Q504	8-729-904-51	TRANSISTOR DTB123EK	
Q701	8-729-904-51	TRANSISTOR DTB123EK	
Q702	8-729-012-27	TRANSISTOR DTB123TK	
Q703	8-729-901-01	TRANSISTOR DTC144EK	
Q704	8-729-900-51	TRANSISTOR DTA114TK	
Q751	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q752	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q772	8-729-141-48	TRANSISTOR 2SB624-BV345	
< RESISTOR >			
R701	1-216-029-00	METAL CHIP 150 5% 1/10W	
R702	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R709	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R710	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R711	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R712	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R713	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R714	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R715	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R716	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R719	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R720	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R751	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R752	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R753	1-216-308-00	METAL CHIP 4.7 5% 1/10W	
R754	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R756	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R757	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R776	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R777	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
< COMPOSITION CIRCUIT BLOCK >			
RB703	1-236-440-11	NETWORK, RES 220K	
RB704	1-236-440-11	NETWORK, RES 220K	
RB705	1-236-424-11	NETWORK, RES 10K	

Ref. No.	Part No.	Description	Remark
RB706	1-236-424-11	NETWORK, RES 10K	
RB707	1-236-424-11	NETWORK, RES 10K	
RB708	1-236-424-11	NETWORK, RES 10K	
RB730	1-236-412-11	NETWORK, RES 1.0K	
RB731	1-236-412-11	NETWORK, RES 1.0K	
RB732	1-236-412-11	NETWORK, RES 1.0K	
RB733	1-236-412-11	NETWORK, RES 1.0K	
RB734	1-236-412-11	NETWORK, RES 1.0K	
RB735	1-236-436-11	NETWORK, RES 100K	
< SPEAKER >			
SP501	1-503-871-21	SPEAKER	
< CRYSTAL >			
X701	1-577-703-21	VIBRATOR, CERAMIC (2MHz)	

*	A-3615-448-A	HAND MAIN BOARD, COMPLETE	

		(SPP-97:US, E92, CA)	
*	A-3668-003-A	HAND MAIN BOARD, COMPLETE (SPP-77:CA)	

*	A-3668-084-A	HAND MAIN BOARD, COMPLETE	

		(SPP-77:US, E92)	
*	A-3668-180-A	HAND MAIN BOARD, COMPLETE (SPP-97:E4)	

*	A-3668-181-A	HAND MAIN BOARD, COMPLETE (SPP-77:E4)	

*	A-3668-291-A	HAND MAIN BOARD, COMPLETE	

		(SPP-77:Taiwan)	
*	A-3668-294-A	HAND MAIN BOARD, COMPLETE	

		(SPP-97:Taiwan)	
< CAPACITOR >			
C501	1-163-096-00	CERAMIC CHIP 13PF 5% 50V	
C502	1-163-237-11	CERAMIC CHIP 27PF 5% 50V	
C503	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C504	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C505	1-124-584-00	ELECT 100uF 20% 10V	
C506	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C508	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C509	1-163-227-11	CERAMIC CHIP 10PF 0.5PF 50V	
C510	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C512	1-163-139-00	CERAMIC CHIP 820PF 5% 50V	
C513	1-163-139-00	CERAMIC CHIP 820PF 5% 50V	
C515	1-163-131-00	CERAMIC CHIP 390PF 5% 50V	
C516	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C517	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	

Ref. No.	Part No.	Description	Remark		
C518	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C519	1-126-157-11	ELECT	10uF	20%	16V
C520	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C521	1-124-442-00	ELECT	330uF	20%	6.3V
C522	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C523	1-124-635-00	ELECT	220uF	20%	6.3V
C524	1-126-163-11	ELECT	4.7uF	20%	50V
C526	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C528	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C529	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C530	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C531	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C532	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C533	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C534	1-126-163-11	ELECT	4.7uF	20%	50V
C535	1-124-584-00	ELECT	100uF	20%	10V
C538	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C539	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C540	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C541	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C542	1-163-085-00	CERAMIC CHIP	2PF		50V
C543	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C544	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
C551	1-163-085-00	CERAMIC CHIP	2PF		50V
C552	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C553	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C556	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C557	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C558	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C559	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C560	1-124-635-00	ELECT	220uF	20%	6.3V
C561	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C563	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C565	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C566	1-163-085-00	CERAMIC CHIP	2PF		50V
C567	1-163-100-00	CERAMIC CHIP	20PF	5%	50V
C568	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C569	1-163-100-00	CERAMIC CHIP	20PF	5%	50V
C570	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C571	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C572	1-163-104-00	CERAMIC CHIP	30PF	5%	50V
C573	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C575	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C580	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C581	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C601	1-164-222-11	CERAMIC CHIP	0.22uF		25V (US, E4, E92, CA)
C603	1-124-257-00	ELECT	2.2uF	20%	50V
C604	1-124-589-11	ELECT	47uF	20%	16V

Ref. No.	Part No.	Description	Remark		
C605	1-126-163-11	ELECT	4.7uF	20%	50V
C606	1-126-160-11	ELECT	1uF	20%	50V
C607	1-124-589-11	ELECT	47uF	20%	16V
C608	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C610	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C611	1-126-163-11	ELECT	4.7uF	20%	50V
C612	1-124-257-00	ELECT	2.2uF	20%	50V
C613	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C651	1-163-106-00	CERAMIC CHIP	36PF	5%	50V (US, E4, E92, CA)
C651	1-163-241-11	CERAMIC CHIP	39PF	5%	50V(Taiwan)
C652	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C653	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C654	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C655	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C656	1-163-181-00	CERAMIC CHIP	100PF	5%	50V
C657	1-136-173-00	FILM	0.47uF	5%	50V
C658	1-163-085-00	CERAMIC CHIP	2PF		50V
C659	1-163-106-00	CERAMIC CHIP	36PF	5%	50V (US, E4, E92, CA)
C659	1-163-239-11	CERAMIC CHIP	33PF	5%	50V(Taiwan)
C670	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C672	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C751	1-125-691-11	CAP, DOUBLE LAYER			0.022F

< FILTER >

CF501	1-567-097-61	FILTER, CERAMIC
CF502	1-579-409-21	FILTER, CERAMIC

< CONNECTOR >

CN501	1-573-791-11	HOUSING, CONNECTOR 24P
CN502	1-573-789-21	HOUSING, CONNECTOR 6P

< DIODE >

D551	8-719-949-46	DIODE	1T32
D701	8-719-023-72	DIODE	DSE015
D751	8-719-820-97	DIODE	U05G4B48
D752	8-719-941-04	DIODE	SB007-03CP
D753	8-719-023-75	DIODE	DCG010
D754	8-719-106-08	DIODE	RD6.2M-B2

< FILTER >

DPX501	1-464-521-21	DUPLEXER UNIT, ANTENNA
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< IC >

IC501	8-759-824-17	IC	LA8606M
IC551	8-759-039-22	IC	MC2833D-R
IC601	8-759-824-18	IC	LA8630M

HAND MAIN

Ref. No.	Part No.	Description	Remark
IC651	8-759-824-20	IC LC7152M	
IC652	8-759-053-70	IC TK11430MTL	
< JUMPER RESISTOR >			
JR501	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR502	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR504	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR505	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR506	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR507	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR508	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR509	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR510	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR511	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR512	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR551	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR552	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR553	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR554	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR555	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR558	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR559	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR560	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR561	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR562	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR563	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR564	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR565	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR568	1-216-296-00	METAL CHIP 0 5% 1/8W	(US, E4, E92, CA)
JR572	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR590	1-216-295-00	METAL CHIP 0 5% 1/10W	(E4, Taiwan)
< COIL >			
L501	1-402-570-11	COIL (ANT)	
L502	1-406-432-21	COIL (OSC)	
L503	1-410-809-21	INDUCTOR 1.2uH	
L504	1-410-733-11	INDUCTOR CHIP 0uH	
L551	1-408-970-21	INDUCTOR 10uH	
L552	1-410-733-11	INDUCTOR CHIP 0uH	
L553	1-406-433-11	COIL (OSC) (SPP-77:CA)	
L553	1-406-433-21	COIL (OSC) (EXCEPT SPP-77:CA)	
L554	1-410-740-21	INDUCTOR CHIP 0.82uH	
L751	1-408-970-21	INDUCTOR 10uH	
< TRANSISTOR >			
Q501	8-729-809-61	TRANSISTOR 2SK543-CJ4	
Q503	8-729-201-26	TRANSISTOR 2SC2715	

Ref. No.	Part No.	Description	Remark
Q551	8-729-821-27	TRANSISTOR 2SA1581	
Q601	8-729-902-99	TRANSISTOR DTC114TK	
Q602	8-729-821-27	TRANSISTOR 2SA1581	
< RESISTOR >			
R506	1-216-246-00	METAL GLAZE 100K 5% 1/8W	
R507	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R509	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R511	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R513	1-216-047-00	METAL CHIP 820 5% 1/10W	
R514	1-216-111-00	METAL CHIP 390K 5% 1/10W	
R516	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R517	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R518	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R519	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R520	1-216-308-00	METAL CHIP 4.7 5% 1/10W	
R522	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R524	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	(US, E92, CA)
R524	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	(E4, Taiwan)
R526	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R527	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R528	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R529	1-216-025-00	METAL CHIP 100 5% 1/10W	
R532	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R552	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R553	1-216-075-00	METAL CHIP 12K 5% 1/10W	(US, E92, CA)
R553	1-216-089-00	METAL CHIP 47K 5% 1/10W	(E4, Taiwan)
R554	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R555	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R557	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R558	1-216-037-00	METAL CHIP 330 5% 1/10W	
R559	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R560	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R562	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R563	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R564	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R565	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R580	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R590	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R603	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(US, E92, CA)
R603	1-216-073-00	METAL CHIP 10K 5% 1/10W	(E4, Taiwan)
R604	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	(US, E92, CA)

HAND MAIN

MICROPHONE

HAND SUB

Ref. No.	Part No.	Description	Remark
R604	1-216-089-00	METAL CHIP 47K 5%	1/10W (Taiwan)
R604	1-216-093-00	METAL CHIP 68K 5%	1/10W(E4)
R605	1-216-089-00	METAL CHIP 47K 5%	1/10W
R606	1-216-029-00	METAL CHIP 150 5%	1/10W
R607	1-216-057-00	METAL CHIP 2.2K 5%	1/10W (US, E92, CA)
R607	1-216-059-00	METAL CHIP 2.7K 5%	1/10W (E4, Taiwan)
R608	1-216-095-00	METAL CHIP 82K 5%	1/10W
R609	1-216-073-00	METAL CHIP 10K 5%	1/10W
R610	1-216-049-00	METAL CHIP 1K 5%	1/10W
R611	1-216-105-00	METAL CHIP 220K 5%	1/10W
R656	1-216-042-00	METAL CHIP 510 5%	1/10W
R657	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R658	1-216-067-00	METAL CHIP 5.6K 5%	1/10W
R659	1-216-001-00	METAL CHIP 10 5%	1/10W
R660	1-216-067-00	METAL CHIP 5.6K 5%	1/10W
R661	1-216-073-00	METAL CHIP 10K 5%	1/10W
R662	1-216-073-00	METAL CHIP 10K 5%	1/10W
R663	1-216-042-00	METAL CHIP 510 5%	1/10W
R664	1-216-216-00	METAL GLAZE 5.6K 5%	1/8W
< VARIABLE RESISTOR >			
RV551	1-241-765-11	RES, ADJ, CARBON 22K (TX POWER)	
RV552	1-241-765-11	RES, ADJ, CARBON 22K (TX MODULATION SENSITIVITY)	
< SWITCH >			
S701	1-572-835-11	SWITCH, SLIDE (RING ON/BATT SAVE)	
< SPEAKER >			
SP701	1-529-073-22	BUZZER	
< TRANSFORMER >			
T501	1-402-173-21	COIL	
T502	1-404-756-11	COIL, IF TRANSFORMER	
< CRYSTAL >			
X651	1-567-773-11	VIBRATOR, CRYSTAL (10.24MHz)	

*	1-645-941-12	MICROPHONE BOARD	*****
	1-641-356-11	HAND FLEXIBLE BOARD	
	3-370-977-01	CUSHION (MICROPHONE H)	
	3-370-981-01	SPRING, BATTERY COIL	

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D501	8-719-105-91	DIODE RD5.6M-B2	
		< MIC >	
M501	1-542-168-11	MICROPHONE, ELECTRET CONDENSER	*****
*	1-648-256-11	HAND SUB BOARD (Taiwan)	*****
		< CAPACITOR >	
C698	1-164-222-11	CERAMIC CHIP 0.22uF	25V(Taiwan)
C699	1-164-222-11	CERAMIC CHIP 0.22uF	25V(Taiwan)
		< CONNECTOR >	
CN606	1-691-742-11	PIN, CONNECTOR (PC BOARD) 4P (Taiwan)	
		< IC >	
IC602	8-759-970-89	IC BA10358F (Taiwan)	
		< RESISTOR >	
R697	1-216-097-00	METAL CHIP 100K 5%	1/10W(Taiwan)
R698	1-216-081-00	METAL CHIP 22K 5%	1/10W(Taiwan)
R699	1-216-085-00	METAL CHIP 33K 5%	1/10W(Taiwan)

		MISCELLANEOUS	*****
65	1-692-321-11	SWITCH, RUBBER KEY	
74	1-646-473-11	PC BOARD, FLEXIBLE	
ANT1	1-501-511-11	ANTENNA, TELESCOPIC	
ANT501	1-501-510-11	ANTENNA, HELICAL	
BA751	1-528-275-11	BATTERY	
SP451	1-544-281-11	SPEAKER (SPP-97)	*****

		ACCESSORIES & PACKING MATERIALS	*****
△	1-465-808-11	ADAPTOR, AC (AC-T37) (E4)	
△	1-465-853-11	ADAPTOR, AC (AC-T37) (EXCEPT E4)	
	1-528-275-11	BATTERY	
	1-558-130-61	CORD (WITH MODULAR PLUG) (EXCEPT CA)	
	1-569-007-11	ADAPTOR, CONVERSION 2P (E4)	
	1-696-772-11	CORD (WITH MODULAR PLUG) (CA)	
	3-371-002-01	ADAPTOR, TAPESTRY	
	3-372-937-01	LABEL (ADDRESS)	
*	3-389-996-01	INDIVIDUAL CARTON (SPP-97:CA)	
*	3-908-854-01	INDIVIDUAL CARTON (SPP-77:CA)	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
*	3-908-381-01	INDIVIDUAL CARTON (SPP-77:US)	
*	3-904-038-01	INDIVIDUAL CARTON (SPP-77:Taiwan)	
*	3-904-041-01	INDIVIDUAL CARTON (SPP-97:Taiwan)	
*	3-905-676-01	INDIVIDUAL CARTON (SPP-77:E4, E92)	
*	3-905-677-01	INDIVIDUAL CARTON (SPP-97:E4, E92)	
*	3-756-014-31	MANUAL, INSTRUCTION (ENGLISH, FRENCH) (CA)	
	3-756-014-41	MANUAL, INSTRUCTION (ENGLISH) (US)	
	3-756-014-51	MANUAL, INSTRUCTION (ENGLISH, CHINESE) (Taiwan)	
	3-756-014-82	MANUAL, INSTRUCTION (ENGLISH, SPANISH, CHINESE) (SPP-97:E4, E92)	
	7-685-149-01	SCREW +P 3X14 TYPE1	
	X-3338-101-1	SCREW ASSY, TAPESTRY	

HARDWARE LIST			

#1	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S	
#2	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	

SPP-77/97

SONY[®] SERVICE MANUAL

*US Model
Canadian Model
E Model*

CORRECTION-1

Correct your service manual as shown below.

Page	INCORRECT			CORRECT		
	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
62	*	A-3615-070-A	BASE BOARD, COMPLETE (SPP-77:CA)	*	A- <u>3668</u> -070-A	BASE BOARD, COMPLETE (SPP-77:CA)

(RPC-95023)